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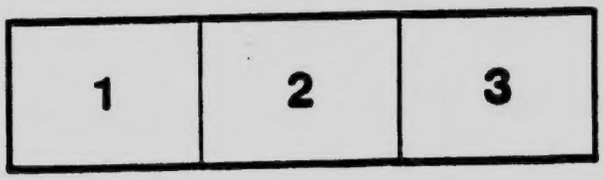

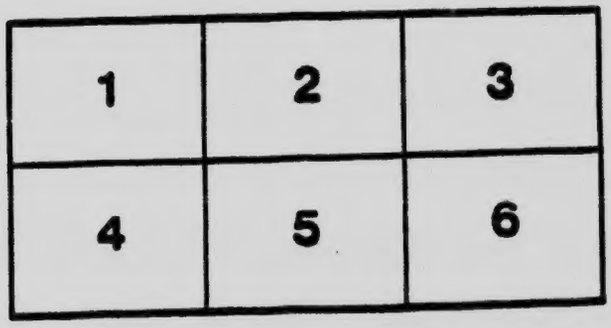

AMERICAN TREE LEAVES, FLOWERS AND FRUITS

1. White pine. 2. Shellbark hickory. 3. Red spruce. 4. Incense cedar. 5. Hemlock. 6. Black walnut. 7. Redwood. 8. Chestnut. 9. Cottonwood. 10. River birch.

ut.

COMPLETE AUTHORITATIVE PRACTICAL

THE UNIVERSAL ENCYCLOPEDIA

A COMPREHENSIVE REFERENCE BOOK

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KEY TO PRONUNCIATION

Three methods are used to indicate the pronunciation of the words forming the headings of the separate articles:

(1) By dividing the word into syllables, and indicating the syllable or syllables to be accented. This method is followed where the pronunciation is entirely obvious. Where accent marks are omitted, the omission indicates that all syllables are given substantially the same value.

(2) Where the pronunciation differs from the spelling, the word is re-spelled phonetically, in addition to the accentuation.

(3) Where the sound values of the vowels are not sufficiently indicated merely by an attempt at phonetic spelling, the following system of diacritical marks is additionally employed to approximate the proper sounds as closely as may be done:

ā, as in *fate*, or in *bare*.
ä, as in *alms*, Fr. *âme*, Ger. *Bahn*=â of Indian names.
â, the same sound short or medium, as in Fr. *bal*, Ger. *Mann*.
a, as in *fat*.
ą, as in *fall*.
a, obscure, as in *rural*, similar to *u* in *but*, ė in *her*: common in Indian names.
ē, as in *me*=*i* in *machine*.
e, as in *met*.
ė, as in *her*.
ī, as in *pine*, or as *ei* in Ger. *Mein*.
i, as in *pin*, also used for the short sound corresponding to ē, as in French and Italian words.
eu, a long sound as in Fr. *jeûne*, = Ger. long *ö*, as in *Söhne*, *Göthe* (Goethe).
eu, corresponding sound short or medium, as in Fr. *peu*=Ger. *ö* short.
ō, as in *note*, *moan*.
o, as in *not*, *frog*—that is, short or medium.
ö, as in *move*, *two*.
ū, as in *tube*.
u, as in *tub*: similar to ė and also to *a*.
ų, as in *bull*.
ü, as in Sc *abune*=Fr. *û* as in *dû*, Ger. *ü* long as in *grün*, *Bühne*.
û, the corresponding short or medium sound, as in Fr. *but*, Ger. *Müller*.
oi, as in *oil*.
ou, as in *pound*; or as *au* in Ger. *Haus*.

The consonants, b, d, f, h, j, k, l, m, n, ng, p, sh, t, v, and z, when printed in Roman type, are always given their common English values in the transliteration of foreign words. The letter c is indicated by s or k, as the case may be. For the remaining consonant sounds the following symbols are employed:

ch is always as in *rich*.
d, nearly as *th* in *this* = Sp. *d* in *Madrid*, etc.
g is always hard, as in *go*.
h represents the guttural in Scotch *loch*, Ger. *nach*, also other similar gutturals.
ŋ, Fr. nasal *n* as in *bon*.
r represents both English *r*, and *r* in foreign words, in which it is generally much more strongly trilled.
s, always as in *so*.
th, as *th* in *thin*.
th, as *th* in *this*.
w always consonantal, as in *we*.
x = ks, which are used instead.
y always consonantal, as in *yea* (Fr. *ligne* would be re-written lēny).
zh, as *s* in *pleasure* = Fr. *j*.

VOLUME IV

International Arbitration (in-tér-nash'un-al). See *Arbitration, International.*

International Language, a language combining various parts of existing languages, intended to provide a vehicle of linguistic communication between various races. *Lingua franca,* the common language spoken by sailors and traders along the Mediterranean, and *Pigeon English,* a combination of Chinese, English and Portuguese used by foreign traders in China, are partial and spontaneous efforts to frame an international language. Scientific attempts in the same direction have been made, with but little success. Among these may be mentioned Volapük (q. v.) and Esperanto (q. v.).

International Law, the law of nations; those rules or maxims which independent political societies or states observe, or ought to observe, in their conduct towards one another. International law is divisible into two heads, the one which regulates the rights, intercourse, and obligations of nations, as such, with each other; the other, which regulates the rights and obligations more immediately belonging to their respective subjects. Thus the rights and duties of ambassadors belong to that head which respects the nation in its sovereign capacity; and the rights of the subjects of one nation to property situated within the territory of another nation, belong to the latter head. Some of the maxims regarding the rights and duties of nations during a state of peace are:—(1) Every nation is bound to abstain from all interferences with the domains of other nations. (2) All nations have equal and common rights on the high seas, and they are not bound to admit any superiority there. The sea which washes the coast of a nation, to the extent of three miles, is now deemed to be a part of the territory of the nation, over which it may exercise an exclusive jurisdiction. And, in respect to persons subjected to its laws, every nation now claims a right to exercise jurisdiction on the high seas, for the purpose of enforcing both international law, and its own municipal regulations. (3) No nation has a right to pursue any criminal or fugitive from justice in a foreign country; its claim, if any, is a mere right to demand him from the nation in which he has taken refuge. (4) Every nation has a right to regulate its own intercourse and commerce with other nations. (5) Foreigners are bound to obey the laws of a country as long as they reside within it, and under its protection; and the property held by foreigners within a country ought to be protected in the same manner as that of natives. (6) Every nation has a right to send and receive ambassadors and other public ministers; and this right of embassy has always been deemed peculiarly sacred. Their persons are held sacred and inviolable. Their property, their servants and retinue enjoy a like privilege. (See *Ambassador.*) (7) It is through the medium of ambassadors and other public ministers that treaties, conventions, and other compacts between nations are usually negotiated, thus forming a positive code for the regulation of their mutual rights, duties, and interests.

War introduces an entirely new order of rules. The right of declaring war results from the right of a nation to preserve its own existence, its own liberties, and its own essential interests. In a state of nature men have a right to employ force in self-defense; and when they enter into society this right is transferred to the government, and is an incident to sovereignty. What are just causes for entering into a war is a question which has been much discussed by publicists. Defensive wars are necessarily justifiable from the fact that they involve the existence or safety of the nation and its interests. But offensive wars are of a very different character, and can be justified only in cases of aggravated wrongs or vital injuries. The first effect of a declaration of war is to put all the subjects of each of the nations in a state of hostility to each other. All the property belonging to each is deemed hostile. If it be personal property it may be captured as prize; if lands, it may be seized and confiscated at the pleasure of

the sovereign; if it be merely in debts or stock it may, in the extreme exercise of the laws of war, be equally liable to confiscation. As soon as a battle is over the conquerors are bound to treat the wounded with kindness, and the prisoners with a decent humanity. And there are some things which seem positively prohibited from their cruelty and brutal barbarity; such are the violation of female captives, the torturing of prisoners, the poisoning of wells, the use of inhuman instruments of war. In time of war there is occasionally an intercourse between the belligerents which should always be held sacred. Thus the interchange of prisoners by cartels; the temporary suspension of hostilities by truces; the passage of flags of truce; the engaging in treaties of capitulation. When any conquest of territory is made the inhabitants pass under the dominion of the conqueror, and are subject to such laws as he chooses to impose upon them. There are also certain rights which war confers on the belligerents in respect to neutrals. Thus they have a right to blockade the ports or besiege the cities of their enemies, and to interdict all trade by neutrals with them. But no blockade is to be recognized unless 'the besieging force can apply its power to every point in the blockaded state.' They have a right also to insist that neutrals shall conduct themselves with good faith, and abstain from all interference in the contest by supplying their enemy with things contraband of war. And hence arises the incidental right of search of ships on the high seas for the detection of contraband goods. A neutral nation is bound to observe entire impartiality between the belligerents. Neutral nations are, strictly speaking, bound to compel their subjects to abstain from every interference in the war, as by carrying contraband goods, serving in the hostile army, furnishing supplies, etc. Subject to the exceptions above referred to, a neutral has a right to insist upon carrying on its ordinary commerce with each of the belligerents in the same manner as in times of peace.

The so-called *Declaration of London* was an attempt to codify international law so far as it related to naval warfare. It was adopted by the International Naval Conference at London in February, 1909, and although ratified by ten signatory powers did not secure the unanimous consent essential to put it into force. It dealt with disputed points of prize law, blockade, contraband, conditional contraband, the doctrine of continuous voyage, unneutral service, destruction of neutral prizes, transfer of flag, convoy, the right to visit and search, the consequenc refusal to permit visit and search, i nity for seizure and so forth. A articles agreed upon as being outsid contraband list were rubber, silk, cotton, metallic ores and other raw rials, agricultural machinery, c watches, furniture, etc. A bill inc rating the Declaration of London passed by the British House of Com but the House of Lords rejected it.

Shortly after the outbreak of the pean war the United States suggest the belligerents that they adopt the visions of the Declaration of Lo Germany and Austria-Hungary ag provided the other nations did like but Great Britain, France and Russi fused to be held by the Declaration.

Various modifications of the Dec tion of London were made by Br orders-in-council, some of which were puted by the United States. Ger was also brought to task for transgre international law by her unrestricted of the submarine, which imperilled lives of American citizens on the seas. The American contention was the U. S. Government acquiesced in right of either belligerent to visit search American vessels for contra of war, but that she could not permit vessels to be destroyed and her citi murdered. It was Germany's insist upon her submarine warfare, in defi of what the United States considered ternational law, that finally brought country into the war. See also *Pe International.*

Internuncio (in-tẽr-nun'shi-ō), envoy of the pope, to small states and republics, dis guished from the nuncio who repres the pope at the courts of emperors kings.

Interpleader (in-tẽr-plēd'ẽr), law, the right or p ess by which a man who is called u by two opposite parties to pay a sum deliver over goods, and who is not s which party is the rightful claimant, call upon the parties to come forward against each other, and so relieve h

Interpolation (in-tẽr-pu-lā'shun) branch of mathem cal and physical analysis, treating of methods by which, when a series of qu tities or observations succeeding e other according to some determinate l have been found, others subject to same law may be interposed betwe them. Thus, the sun's right ascensi being found for every Greenwich noo its values at any other times may filled in by interpolation; and simila

from a series of observed relations between the temperature and pressure of saturated steam, the pressure corresponding to any temperature may be found.

Interrogatories, in law, written questions put during an action, by one party to the other, which must be answered in writing, and upon oath. Their main object is to extract admissions from the person interrogated, in order to save the person interrogating from proving the facts. Interrogatories will be disallowed if they are irrelevant and unnecessary, prolix, oppressive, or scandalous. They are allowed in many cases, especially where it is necessary to take evidence outside the jurisdiction of the court by deposition.

Interstate Commerce Commission, an important body created by an act passed by the Congress of the United States and signed by President Cleveland on Feb. 4, 1887. This act was extensively amended by another act of March 2, 1889, and was supplemented by later acts. So amended and supplemented, an Interstate Commerce Commission of seven members is provided for, to be appointed for a seven years' term by the president, by and with the advice and consent of the Senate. The commissioners are prohibited from engaging in 'any other business, vocation, or employment'; and any person is ineligible who is in the employ of or holds any official relation to any common carrier subject to the provisions of the act, or who owns stocks or bonds thereof, or who is in any way pecuniarily interested therein. The commission has power to inquire into the management of the business of all common carriers, subject to the provisions of the act which it is required to enforce. In general, the duties of the commission are to prevent unjust discrimination by common carriers, through rebates or otherwise, as between different persons or corporations, and to secure reasonable and just transportation charges.

Interstate Trade Commission, a federal commission, first organised in 1915. 'Rules of Practice' were drafted very much along the lines of those before the Interstate Commerce Commission, except that they provide that only the Trade Commission can institute formal complaint against any business firm or corporation. Any person, partnership, corporation or association may apply to the commission to institute a proceeding in respect to any violation of the anti-trust law.

Interval (in'tèr-val), in music, the distance between two given sounds, or their difference in point of gravity or acuteness. Intervals are *simple* when confined within the octave, and *compound* when they exceed it, and are named according to the distance of the two boundary notes. Thus the interval of a whole tone (CD) is called a second, of a whole tone and a semitone (CE♭) a minor third, etc. All the intervals of any major scale reckoning up from the key-note are *major*. Intervals a semitone less are *minor*. If they are a semitone greater than major, they are *augmented*; if a semitone less than minor, they are *diminished*. See *Music*.

Intestacy (in-tes'ta-si), in law, the condition of a person who dies without having left any will at all, or having left one not legally valid, or such a will that nobody becomes heir under it. The general principle in the United States and Britain is that the law provides an heir or next of kin if the owner himself has not done so. In the case of a person dying partially intestate, the property not included in the settlement goes to the heir-at-law or next of kin according as it is real or personal estate.

Intestine (in-tes'tin; Lat. *intestinum*, from *intus*, within), the name given to the convoluted membranous tube which extends from the right or pyloric orifice of the stomach to the anus, and which receives the ingested food from the stomach, retains it for a longer or shorter period, mixes it with the bile, pancreatic juice, and intestinal secretions, gives origin to the lacteal or absorbent vessels which take up the chyle and convey it into the current of the blood, and which, lastly, conveys the fæcal or indigestible products from the system. In man it is usually divided into the *small intestine*, which comprehends the duodenum, jejunum, and ileum; and the *large intestine*, comprehending the cæcum, colon, and rectum. Three distinct coats are to be distinguished in the structure of the small intestine; these, named from without inwards, are known

HUMAN STOMACH AND INTESTINAL TUBE.

a, Stomach.—*b* to *d*, Small Intestine. *b*, Duodenum. *c*, Jejunum with convolutions. *d*, Ileum, with do.—*e* to *g*, Large Intestine. *e*, Cæcum, *ff*, Colon. *g*, Rectum.

as the *serous*, *muscular*, and *mucous* coats. The innermost or mucous coat presents several interesting structures. Among these are the *valvulæ conniventes*, or closely folded transverse plaits of the mucous membrane, the functions of which would appear to be those of serving materially to increase the digestive surface or area of the intestine, and thoroughly mingle the ingesta with the secretions. The surface of the membrane is covered with innumerable fine projections termed *villi*, which give to it almost a velvety texture. Each villus is found under the microscope to be an outstanding process of the mucous membrane, containing internally an artery giving off minute ramifications, a vein by which the venous blood is returned, and, lastly, the lacteal or absorbent vessel. The function of the villi, which are most numerous in the duodenum, is preëminently that of the absorption of the chyle or fluid product of digestion, as a preliminary to its transmission to the current of the blood or circulation. Four varieties of glands are also connected with the small intestine, the first three being named after their respective discoverers, Lieberkühn, Peyer, and Brünner, and the other variety occurring singly—the 'solitary' glands—and in groups—Peyer's patches. The exact functions of these bodies are not well known. The duodenum lies in the epigastric region, and makes three turnings, receiving by a common opening between its first and second flexure the bile-duct and the pancreatic-duct. The conversion of the chyme from the stomach into chyle is thus accomplished in the duodenum. The jejunum, commencing at the left side of the second lumbar vertebra, becomes insensibly and gradually continuous with the ileum, which, terminating the small intestine, becomes continuous with the large intestine in the right iliac fossa, and opens into the *colon*, or first portion of the large intestine, which is divided from the small intestine by the *ileo-cæcal* valve. Below the point at which the ileum opens into the colon we find a short blind sac continuous with the colon, and known as the *cæcum;* and attached to the lower extremity of the cæcum, and communicating with the cæcal cavity, we find a little closed tube, to which the name of *appendix vermiformis* is applied.

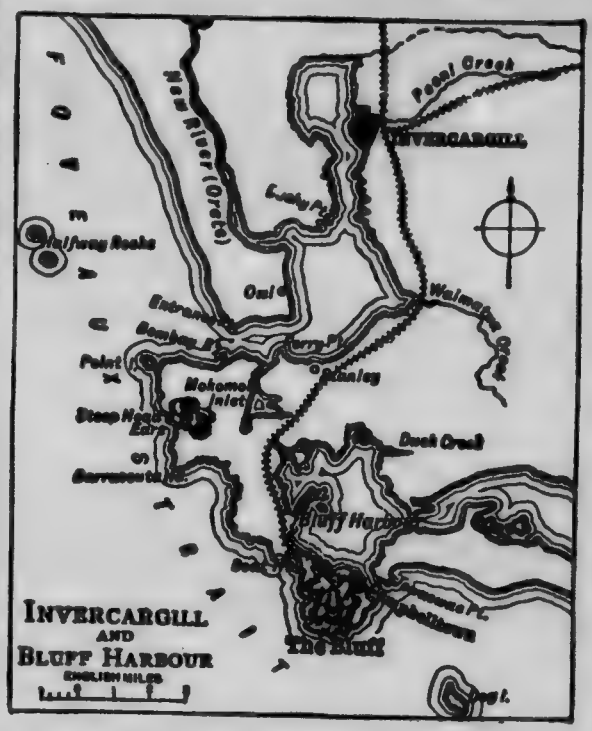
We next find the colon to ascend in the right lumbar region, in front of the kidney. This portion is known as the *ascending colon*. It then crosses the abdominal cavity to the left side, and becomes the *transverse colon;* and finally descends as the *descending colon*, in front of the left kidney into the left groin, where, after making a curve like letter S—*sigmoid flexure* of the colo it terminates in the last portion of intestinal tract. This last portion, kno as the *rectum*, finally terminates in anus. The large intestine measures fr 5 to 6 feet in length; the small intest measures from 16 to about 24 or 26 f in length; so that the entire intesti tract may be regarded as being about f or six times the length of the body its The three coats of the small intest are repeated in the large intestine. T mucous or inner coat is not elevated form villi in the large, as in the sm intestine, and only two kinds of glan the glands of Lieberkühn, and the solita glands, are to be distinguished in t large intestine. The function of the lar intestine is chiefly excretory, but a c tain power of absorption is also exercis by its vessels. The food is propell along the entire intestinal tract by t alternate contraction of the longitudin and circular muscular fibers, by whic means it is gradually pushed along t tube with a *vermicular* or *peristalt* movement. The ileo-cæcal valve serves prevent regurgitation of matters into th small intestine after they have passe into the colon. The *mesentery* is the ter given to the fold of peritoneum by mean of which the small intestines are attache to the spine. The blood-vessels sup plying the intestinal tube are the *superio* and *inferior mesenteric arteries* and thei branches, derived from the *abdomina aorta*. The veins of the intestines empt their contents into the *vena portæ*, which distributes itself through the liver, and from the blood of which the bile is se creted by the hepatic or liver cells. The nerves of the intestines are derived from the *sympathetic* or *ganglionic system* of nerves, and have also a connection with the eighth cranial nerve—the pneumogastric nerve of the right side.

Intoning, a musical modulation of the voice, differing from chanting chiefly in the fact that in the latter case the cadence is more developed, the divisions more rhythmical, and the music in continuous harmony. The practice prevails in the Greek, Roman, Anglican, and Lutheran churches.

Intoxication, the state produced by the excessive use of alcoholic liquids. In the first stage the circulation of the blood becomes somewhat more rapid, and all the functions of the body and mind are exercised with more freedom. In the second stage the effect on the brain is more decided. The peculiarities of character, the faults of temperament, manifest themselves without

reserve: the secret thoughts are disclosed, and the sense of propriety is lost. In the next degree consciousness is still more weakened; the ideas lose their connection; vertigo, double vision and other discomforts supervene; until finally the excitement partakes of the nature of delirium, and is followed by a more or less prolonged stupor, often by dangerous coma. In cases of extreme intoxication the stomach-pump should be employed, if ordinary emetics fail to overcome the torpor of the stomach. Among the best antidotes are preparations of ammonia and strong infusions of coffee and green tea. The body should be kept warm.

Intrenchment (in-trensh'-ment), any work that fortifies a post against the attack of an enemy. The word is generally used to denote a ditch or trench with a parapet. See *Fortification.*



Introit (in'troit), a psalm or passage of Scripture sung or chanted while the priest proceeds to the altar to celebrate mass; now used for any musical composition designed for opening the church service.

Intuition (in-tū-i'shun), in philosophy, the act by which the mind perceives the agreement or disagreement of two ideas, or the truth of propositions, immediately, or the moment they are presented, without the intervention of other ideas, or without reasoning and deduction.

Intussusception (in-tus-su-sep'-shun), in pathology, the descent of a higher portion of intestine into a lower one: generally of the ileum into the colon. When it takes place downwards, it may be termed *progressive;* when upwards, *retrograde.*—In physiology, the process of nutrition, or the transformation of the components of the blood into the organised substance of the various organs.

Inula (in'ū-la). See *Elecampane.*

Inulin (in'ū-lin; $C_6H_{10}O_5$), a substance analogous to starch, obtained from the dahlia, artichoke, elecampane, potato, and other plants.

Invalides (an-vā-lēd), HÔTEL DES, a splendid hospital for disabled soldiers at Paris, in the suburb of St. Germain, erected by Louis XIV between 1670 and 1673. A soldier must have served ten years to be received into this hospital on account of poverty or infirmity. In vaults under the dome lie the remains of Turenne and several other great French commanders, including those of Napoleon I, deposited here December 15, 1840.

Inventory (in'ven-tu-ri), a list containing a short description, together with the values, of goods and chattels, made on various occasions, as on the sale of goods, transfer of movables for pecuniary considerations, decease of a person, etc.

Inveraray (in-vèr-ā'ri), a Scotch royal burgh and seaport, capital of the county of Argyle, beautifully situated near the head of Loch Fyne, 42 miles northwest of Glasgow; having the castle of the Duke of Argyll in the immediate vicinity. Pop. 1369.

Invercargill (in-ver-kär'gil), a town of New Zealand, county of Southland, province of Otago, situated near the mouth of the New River, about 150 miles s. w. of Dunedin. It is well built, and has an athenæum, hospital, public halls, street tramways, breweries,

foundries, flour-mills, etc. The surrounding district is pastoral and agricultural. It is connected by rail with the port of Campbelltown 17 miles distant, and situated near the entrance to Bluff Harbor. Here there is excellent accommodation for the largest vessels at all times of the tide. Pop. 7299.

Inverness (in-vêr-nes'), a burgh of Scotland, capital of the county of the same name, and chief town in the Highlands. It is beautifully situated, partly on low ground, partly on a gentle acclivity, on both sides of the Ness. The town is well built, among the chief edifices being the county buildings, a fine castellated structure, containing the court-house and jail; the town-hall, the episcopal cathedral, and the Royal Academy. The industries include ship-building, rope-making, tanning, distilling, brewing, etc., and there is a considerable trade. Large vessels unload at the quays. Inverness received a burg charter from William the Lion in the twelfth century. Pop. 21,238.—The county, which is the largest in Scotland, stretches diagonally across the island from sea to sea, and includes on the west the island of Skye, several smaller islands, and all the outer Hebrides, except the north part of Lewis. Area, 4255 square miles, of which a very small portion is under tillage. Great part of the surface is barren heath, useless except for sporting purposes, but a considerable portion is suited for rearing cattle and sheep. The surface generally is mountainous, and presents much fine scenery. Near the southwestern extremity of the Caledonian Canal is Ben Nevis, 4406 feet high, the loftiest mountain in Great Britain. The principal rivers are the Spey, Ness, and Beauly, on all of which there are valuable salmon fisheries. Some of the lakes are of considerable size, and beautifully situated. The largest is Loch Ness, forming part of the Caledonian Canal route. Extensive tracts are held as deer forests, in which the red and roe deer roam at will. The arable and productive land lies chiefly on the sea coast, and on the banks of the lakes and rivers. Gaelic is the prevailing language. Pop. 90,104.

Invertebrata (in-vêr-te-brā'ta), a collective term for the five great lower divisions or sub-kingdoms of the animal series, which agree in not having a vertebral column or backbone, used in contradistinction to the highest group of the animal kingdom, to which the name *Vertebrata* or *Vertebrate* animals is given, all of which possess a vertebral column. In the system of Cuvier the Invertebrata were divided into the *Radiata*, *Articulata*, and *Mollus* Succeeding naturalists split up Cuvie *Radiata* into the sub-kingdoms *Proto* (single-celled animals), *Cœlenter* (sponges and corals), and *Echinoderm* (starfish, etc.). Those with the *Ann losa* (worms), *Arthropoda* (crustacea insects, etc.), and *Mollusca* (shellfish now form the recognised divisions of t Invertebrata. In these no structu analogous to the vertebrate spine found. Where hard parts exist in the they are generally placed on the outsi of the body, and thus constitute an *ex skeleton*, or outer *skeleton*—as opposed the *endoskeleton*, or internal skeleton the Vertebrata. The shell of the crab lobster is a familiar example. The limb of Vertebrates are never more than fou in number, while those of the Invert brata may be very numerous. Amon Vertebrates also reproduction is purel and solely *sexual;* but in Invertebrat *asexual* reproduction is common, many them reproducing their species by *gemm tion* or *budding*, and by *fission*.

Investiture (in-ves'ti-tūr), in th feudal law, was the ope delivery of a fee or fief by a lord to hi vassal, thus, by external proof, affordin evidence of possession; or the formal in troduction of a person into some office o dignity. Investiture was often performe by the presentation of some symbol t the person invested, as a branch of tree, etc. The investiture of persons wit ecclesiastical offices or dignities is histori cally the most important phase of th subject. The estates and honors which composed the ecclesiastical temporalitie were considered to partake of the natur of fiefs, and therefore to require simila investiture from the lord. Charlemagne is said to have introduced this practice, and to have invested the newly-consecrated bishop by placing a ring and crosier in his hands. The custom does not appear to have been opposed during the lapse of two centuries from his reign, but the church at last protested strongly against it. Alexander II issued a decree against lay investiture in general. This was revived by Gregory VII (Hildebrand), who, having succeeded in annulling the prerogative of the emperors to nominate or confirm popes, sought to disjoin entirely the ecclesiastical from the civil rule. In 1075 he issued a bull forbidding under penalty of excommunication lay investiture and the enfeoffing of prelates with the ecclesiastical temporalities. Henry IV, emperor of Germany, vigorously resisted the pope, but was (1077) obliged to submit and perform severe penance for his acts of opposition.

The struggle then begun with Henry IV by Gregory was carried on by his successors, and it was not till the papacy of Calixtus II, in 1122, that the question was settled in favor of the pope. By a concordat then arranged at Worms Henry V resigned forever all pretence to invest bishops by the ring and crosier, and recognized the freedom of elections; the new bishop, however, was to receive his temporalities by the scepter. In England Paschal II was engaged in a contest little less fierce than that with the emperor. Anselm, the primate, refused to do homage to Henry I, for his see. The king asserted an unqualified right of investiture, which the pope as unqualifiedly denied. After a protracted struggle the controversy ended in England, as it did afterwards in Germany, by compromise. Paschal offered to concede the objections against homage provided Henry would forego the ceremony of investiture. To this he agreed (1107).

Invoice (in'vois), an account in writing of the particulars of merchandise transmitted to a purchaser, giving price and quantity, note of charges, and any other needful details. By sending an invoice along with goods a merchant gives official advice to his correspondent of the understood terms of a contract. If the goods are received and the invoice retained this will be held valid evidence in law of the contract.

Involucre (in-vo-lū'kèr), in botany, a collection of bracts round a circle of flowers. In umbriferous plants it consists of separate narrow bracts placed in a single whorl; in many composite plants these organs are imbricated in several rows. The same name is also given to the covering of the sori of ferns.

Hemlock Plant.
a, Involucre. bb, Involucels.

Involute (in'vu-lūt), in geometry, the curve traced by any point of a string when the latter is unwrapped, under tension, from a given curve.

Involution (in-vu-lū'shun), the calculation of any power of a quantity, that is, the multiplication of a quantity by itself any number of times. Thus $2 \times 2 \times 2 = 8$; here 8, the third power of 2, is found by involution. *Evolution* is the opposite process.

Io (ī'ō), in Greek mythology, the daughter of Inachus, beloved by Zeus, who, to protect her from the jealousy of Hera (Juno), changed her into a beautiful white heifer.

Iodine (ī'u-dīn; Gr. *ion*, a violet), a peculiar non-metallic elementary solid substance, symbol I; atomic weight 127. It exists in the water of the ocean and mineral springs, in marine molluscous animals, and in seaweeds, from the ashes of which it is chiefly procured (see *Kelp*). It exists also in certain land-plants and in cod-liver oil. It is found in certain minerals, the water of certain rivers, and the rain-water of several towns. At the ordinary temperature of the atmosphere it is a solid crystalline body. It unites readily with chlorine, potassium, etc., with the emission of light and great heat. It is a non-conductor of electricity, and, like oxygen and chlorine, is a negative electric. Like chlorine, it destroys vegetable colors, but with less energy. Its color is white, but as ordinarily seen is a bluish or grayish black and of a metallic luster. It is often in scales, resembling those of micaceous iron ore; sometimes in brilliant rhomboidal plates or in elongated octahedrons. The specific gravity of solid iodine is 4.947. At 225° it fuses, and enters into ebullition at 347°. Its vapor is of an exceedingly rich violet color, a character to which it owes its name. This vapor is remarkably dense, its specific gravity being 8.782. Iodine has a very acrid taste, and its odor resembles that of chlorine. It is an irritant poison; but in small doses has been of great service in certain forms of glandular disease. It is largely used in photography, in the preparation of aniline colors, and in other ways. It is very sparingly soluble in water, but dissolves copiously in alcohol and in ether, forming dark brown liquids. It possesses strong powers of combination, and forms, with the pure metals, and most of the simple non-metallic substances, compounds which are termed *iodides*. With hydrogen and oxygen it forms *iodic acid*; combined with hydrogen it forms *hydriodic acid*. This is a colorless gas, which strongly reddens litmus, and decomposes many chlorides. Starch is a characteristic test of iodine, forming with it a compound of a deep blue color. This test is so delicate that a solution of starch dropped into water containing less than a millionth part of

iodine is tinged blue by it. The great consumption of iodine is in medicine; it is employed in its pure state, but much more frequently in the form of iodide of potassium, which has been found of great benefit in goitre, scrofula, disease of the liver and spleen, in syphilitic affections, rheumatism, etc., as well as in lead-poisoning. Iodide of iron is another useful medicine, being employed in chlorosis, anæmia, and glandular affections.

Iodoform (I-ō'du-form; CHI_3), a substance analogous to chloroform in composition, but in which iodine replaces chlorine. It is in the form of small, solid yellow crystals, and is prepared by the action of alcohol and other bodies on iodine and potash. It is nearly insoluble in water, but dissolves in ether oils and alcohol. It is used in medicine as an antiseptic, and acts slightly as an anodyne; it is successfully applied to ulcers and sores of various kinds, and is used as a snuff for cold in the head.

Iola (I-ō'la), a city, capital of Allen County, Kansas, on the Neosho River, 8 miles N. of Humboldt. It is an agricultural center, and lies in the natural gas region of the state. It has large zinc smelters, large cement works, brick plants, and other industries. Pop. 9032.

Iolite (I'u-lit). See *Dichroite*.

Ion (i'on), an ancient Greek tragic poet, a native of Chios, who flourished about 450 B.C. His tragedies were represented at Athens with great applause, and he is greatly commended by Aristophanes, Athenæus, etc.

Iona (ē-ō'na), an island of Scotland, one of the Inner Hebrides, belonging to the county of Argyle, separated from the southwest extremity of Mull by the Sound of Iona, 1¼ miles wide, and about 7¼ miles southwest of Staffa. The name is believed to be a misreading of *Iova*, *Ioua*, a name that occurs in old MSS., but the most common ancient name was I, Y, Hy (or similar forms). It was also commonly called I-colm-kill or I-columb-kill, that is, 'isle of Columba's cell' or 'isle of Columba of the cell (or church).' It is about 3 miles long by 1½ miles broad. It derives its interest from its history and old ruins, the remains of religious establishments of uncertain date, but popularly attributed to Columba, who took up his residence here in 563. They are all, however, of a much more recent date. The principal ruins are those of the cathedral church of St. Mary, of a nunnery, five chapels, and of a building called the Bishop's House. St. Oran's Chapel, as it is called, is supposed to be the most ancient; it is small, being only 60 feet by 20 feet. Attached to it is a burying-ground, in which various kings of Scotland, Ireland, and Norway are said to have found their last resting-place. The most extensive ruin is that of the church of St. Mary, which is cruciform, surmounted at the intersection of the nave and the transept by a square tower of about 70 feet in height. The length of the transept is 70 feet, and that of the body of the church, east to west, 160 feet. The island is now easily reached in summer by steamers daily from Oban. Pop. 243.

Ionia (I-ō'ni-a), that part of the seaboard of Asia Minor which was inhabited by Ionian Greeks, a beautiful and fertile country opposite the islands of Samos and Chios, which also belonged to it. According to tradition the Greek colonists came over from Attica about the middle of the eleventh century B.C., and founded twelve towns, which, though mutually independent, formed a confederacy for common purposes. These included Phocæa, Ephesus, Miletus, etc., and latterly Smyrna. Commerce, navigation, and agriculture early rendered them wealthy and flourishing, but the country was made tributary by Crœsus, king of Lydia, and later by Cyrus, king of Persia (557 B.C.). With an interval of independence they remained under Persia until this empire was overthrown by Alexander the Great, 334-331 B.C., when they became a part of the Macedonian Empire. Ionia, at a later period, became part of the Roman province of Asia. It was later devastated by the Saracens. Few vestiges of its civilization remain.

Ionia, a city, capital of Ionia county, Michigan, on Grand River, 34 miles E. of Grand Rapids. It has various industries and a large trade in lumber, and is the seat of a State house of correction and an asylum for insane criminals. Pop. 5030.

Ionian Dialect. See *Greek Language*, under *Greece*.

Ionian Islands, a number of Greek islands in the Ionian Sea, extending along the western and southern shores of Greece, of which the largest are Corfu, Cephalonia, Zante, and Cerigo, others being Ithaca or Thiaki, Paxos and Santa Maura; area, 1097 square miles. All are extremely mountainous; and were it not for the vine, olive, and currant, especially the last, they could support but a small number of inhabitants. The climate is more uniformly temperate and humid than that of the mainland. The staple exports are oil, currants, valonia, wine, soap, and salt. The few manufactures are

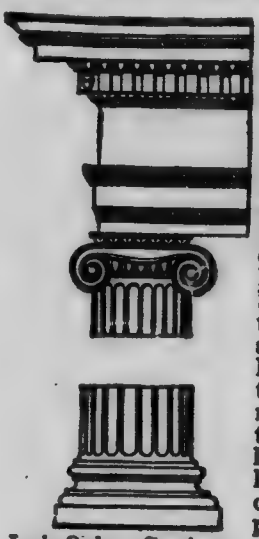
chiefly textile and ornamental. The religion is that of the Greek Church. The Ionian Islands often figure in the ancient history of Greece, but only singly. In 1386 Corfu voluntarily surrendered itself to Venice, and soon after the other islands placed themselves under its protection. In 1797 the French became masters. In 1809-10 they were occupied by British troops, and in 1815 the seven islands were formed into a republic, under the protectorate of Great Britain. They were transferred to Greece in 1864. Pop. about 250,000.

Ionian Mode, an old ecclesiastical mode or scale represented by the modern scale of C major.

Ionians. See *Greece* (*History*) and *Ionia.*

Ionian Sea, the ancient name of that part of the Mediterranean which lies between the south part of Italy and Greece.

Ionic Order, one of the orders of classic architecture, the distinguishing characteristic of which is the volutes of its capital. In the *Grecian Ionic* (1) the stylobate consists of three receding equal steps the combined height of which is from four-fifths to a whole diameter; (2) the column, which includes band, shaft, and capital, is rather more than nine diameters in height, the shaft being fluted with twenty-four flutes and alternating fillets; while (3) the entablature is rather more than two diameters in height. The volutes are connected on the flanks by a peculiar roll-molding, called the *baluster* or *bolster.* In the *Roman Ionic,* a modification of the later style, the stylobate is lofty and not graduated; the shaft diminishes one-tenth of a diameter and has twenty fillets and flutes; the capital, which is two-fifths of a diameter, has its volutes a little lower than the other, and a square abacus with molded edges covers the whole. The chief examples of the Grecian Ionic are those of the Athenian Acropolis; while those of the Roman Ionic are found in the temple of Fortuna Virilis and the Coliseum at Rome.



Ionic Order—Grecian.

Ionic School (ī-on'ik), the earliest school of Greek philosophy, a school which attempted to explain the phenomena of nature from the forces and attributes of matter itself. It taught the doctrine of the immediate unity of matter and life, according to which matter is by nature endowed with life, and life is inseparably connected with matter. The originator of this school, and indirectly of Greek philosophy in general, was Thales, who flourished about 600 B.C. The other chief philosophers of the school were Anaximander, Anaximenes, Heraclitus, and Anaxagoras. See the separate articles.

Ions (ī'ons), the term given by Michael Faraday (1791-1867) to the components of chemical compounds set free by electrolysis, being distinguished as *anions* when set free at the positive pole, and as *cations,* when at the negative pole.

I. O. U., a written acknowledgment of debt, usually made in this form:—To Mr. A. B. I. O. U. Ten Dollars.—C. D. May 12th, 1889. An acknowledgment of debt made in this form requires no stamp. It is not negotiable. The letters I. O. U. are of course used instead of the words 'I owe you.'

Iowa (ī'ō-wa), one of the central United States, bounded on the north by Minnesota, east by Wisconsin and Illinois, south by Missouri, and west by Nebraska and South Dakota, from which it is separated by the Missouri River; area 56,147 square miles. It is well watered, its streams being all affluents of the large rivers which bound it on the west and east. To the Mississippi flow the Wapsipinicon, Iowa, Cedar, Skunk, and Des Moines, with a general S. E. course. To the Missouri flow the Big and Little Sioux and other streams. The surface is undulating, nearly four-fifths consisting of prairies originally covered with a rich coat of coarse grass, forming excellent pasturage. The climate is very healthy, and winter continues from December to March; the summer heat is tempered by frequent showers. The soil is in general very good, consisting of a deep black mould, intermingled in the prairies with sand, red clay, and gravel. The eastern and central portions are rich in minerals. Coal is mined to a considerable extent, and zinc, iron and lead are found. The coal-fields cover an area of 20,000 sq. miles, the lower measure being the most important. The output by the statement of 1912 was valued at $13,152,088. Limestone, sup-

sum, and clay are abundant. Iowa is a great agricultural state, producing immense quantities of barley, wheat, hay, forage, etc., and also stands high in regard to dairy farming. The chief fruit crop is apples. Other industries include the manufacture of brick, farm implements, flour-milling, pork-packing, machinery, cement works, etc. The length of railways open for traffic is about 10,000 miles. It possesses exceptional advantages for river trade, and the smaller streams supply abundant water-power. There is a State University (at Iowa City) and a flourishing State College of Agriculture and Mechanical Arts (at Ames). The settlement of Iowa began in 1833, when the first purchase of land from the Indians took place; its territorial government was instituted in 1838, and it was admitted into the Union in 1846. The capital and chief city is Des Moines. The other principal cities are Sioux City, Dubuque, Davenport, Burlington, Cedar Rapids, Council Bluffs and Keobuk. The state takes its name from the Iowa Indians. Pop. (1910) 2,224,771.

Iowa City, a city, capital of Johnson County, Iowa, on the Iowa River, at the head of the navigation. It contains the State university, and was once the State capital. It has important meat-packing and manufacturing industries, and a large shipping trade in grain, produce and stone. Pop. 10,091.

Ipecacuanha (ip-e-kak-ū-ā'na), a substance used in medicine, of a nauseous odor and repulsive, bitterish taste, the dried root of several plants of the nat. order Rubiaceæ growing in South America. All the kinds have nearly the same ingredients, but differ in the amount of the active principle which they contain. The best is the annulated, yielded by the *Cephaëlis Ipecacuanha*, a small shrubby plant, a native of Brazil, Colombia, and other

Ipecacuanha Plant (*Cephaëlis Ipecacuanha*).

parts of South America. When given in very small doses ipecacuanha improves the appetite and digestive powers; in a somewhat larger dose it may be given to increase the secretion from the mucous membrane of the air-passages; and in a still larger, from 15 to 20 grains, it occasions vomiting. It is also capable, by being combined with other substances, of producing increased perspiration, as in the well-known Dover's powder. The name of *American ipecacuanha* is given to the *Euphorbia Ipecacuanha*, a plant which grows in sandy places in North America. It is emetic, purgative, and diaphoretic.

Iphigenia (if-i-je-nī'a), in Greek legend and poetry, daughter of Agamemnon and Clytemnestra. To avert the wrath of Artĕmis, whom Agamemnon had enraged by killing a consecrated hind, and who detained the Greek fleet at Aulis that had been prepared for the Trojan war, Iphigenia was to be sacrificed on the altar; but a hart was miraculously substituted for her, and she was conveyed in a cloud to Tauria. She became a priestess there to Artĕmis, and saved her brother Orestes when on the point of being sacrificed.

Ipomœa (ip-o-mē'a), a large genus of plants of the nat. order Convolvulaceæ, consisting mostly of twining prostrate herbs, widely distributed in warm regions. The species of most importance is *I. Purga*, which yields the jalap of commerce. See *Jalap*.

Ipsambul (ip-sam'bul), ABUSAM'BUL, or ABUSIM'BEL, a village of Nubia, on the left bank of the Nile; remarkable for containing two of the most perfect and magnificent specimens of Egyptian rock-cut temples existing. The façade of one of them is adorned with several stupendous colossal sitting statues of Rameses II (the Great), the largest pieces of Egyptian sculpture yet discovered.

Ipsara. See *Psara*.

Ipsica. See *Modica*.

Ipsus (ip'sis), a small town of Phrygia, Asia Minor, famous for a great battle fought B.C. 301. See *Antigonus*.

Ipswich (ip'sich), a river-port of England, capital of Suffolk, on the Orwell. It contains many interesting specimens of mediæval architecture. The public buildings include a fine town-hall, a new post-office, a custom-house, county courthouse, cavalry barracks, theater, etc. The industries embrace agricultural implements, machinery, artificial stone, artificial manure, silk, tanning, ropes, lime and cement, brewing, shipbuilding, etc. Ipswich is a town of great antiquity. It was originally called Gippeswich, from the neighboring river Gipping. King John gave it its first charter. Pop. (1911) 73,939.

Ipswich, a town in Essex County, Massachusetts, on the Ipswich River, three miles from the sea and 27 miles N. N. E. of Boston. Its industries include cotton and woolen hosiery, matches, isinglass, shoes, etc. Pop. 5777.

Iquique (i-kē'kā), a seaport of Chile, province of Tarapacá, recently a fishing village, but now a considerable town with an important trade, its rise being due to the extensive deposits of nitrate of soda and borax, and the silver mines, etc., in its neighborhood. It has suffered much from earthquakes, and in 1879 was blockaded, bombarded, and finally captured by Chile. Pop. 42,440.

Irade (i-rā'de), a decree or command of the Sultan of Turkey directed to the grand vizier, whose duty it is to promulgate it to the public.

Irak Ajemi (ē-rāk' āj'e-mē), an interior province of Persia, separated from the Caspian Sea by Ghilan and Mazanderan; area, about 138,000 sq. miles, a large part of which in the east is occupied by salt deserts, the rest being largely mountainous, with some fine valleys and rich plains. The chief towns are the capital, Teheran, and Ispahan.

Irak Arabi (a-rā'bē), the district lying between the rivers Tigris and Euphrates, at the lower part of their course, corresponding nearly to the ancient Babylonia.

Iran (ē-rān'), or ERAN (Old Persian, *Aryana;* Zend, *Airyana*, that is, land of the Aryans), the name given by the ancient Persians to their native land, and still used by the modern Persians, though it is also employed in a wider sense to designate the whole of the country from the Indus to the Tigris, in contradistinction to Turan, the name often employed as synonymous, with Turkestan.

Iranian Languages (e-rān'i-an), a family of languages belonging to the Indo-European stock, closely allied to the Indian group, and called by some philologists Persian, from the best-known member of the family. The two oldest known Iranian languages are the Old Persian of the cuneiform inscriptions and the Old Bactrian or Zend, the latter the language in which the Zend-avesta or sacred writings of the Parsees is composed. The Middle Iranian languages are the Pehlevi, and still later the Parsee, which are preserved in the commentaries to the Zend-avesta. The latter approaches pretty closely to the modern Persian. The most important of the New Iranian languages is the modern Persian, in which has been produced a very rich and celebrated literature. The Afghan or Pushtu, and the dialects of the Kurds, form separate branches of the Iranian family.

Irawadi (ir-ä-wä'di). See *Irrawaddy.*

Irbit (ēr-bēt'), a town in Russia, in the government of Perm, on the frontiers of Siberia, at the confluence of the Irbit and the Nisa. It is noted for a great annual fair, held in the month of February. Pop. 20,064.

Ireland (ir'land; in Irish, *Eria;* in Latin, *Hibernia*), the more western and smaller of the two principal islands of which the United Kingdom of Great Britain and Ireland is composed, is separated from Great Britain on the east by the Irish Sea, and surrounded on all other sides by the North Atlantic Ocean. Measured diagonally, the greatest length is 300 miles; and the greatest breadth is 212 miles; the central breadth, nearly between the bays of Dublin and Galway, is 110 miles. The area is 32,531 square miles. Ireland is divided into four provinces of Leinster, Ulster, Munster, and Connaught, and into 32 counties.

The population in 1841 was 8,175,124; in 1851, 6,552,385, the decrease being partly owing to the famine resulting from the potato disease in 1846-47, and partly to emigration. Since 1851 over 4,000,000 emigrants have left the country. The returned population, at 1911 census, 4,381,951. The capital is Dublin; the other chief towns are Belfast, Cork, Limerick, and Londonderry.

Surface.—The coast, forming a line of nearly 3000 miles, is, in general, bold and rugged, and is diversified by numerous indentations, some of which run far into the land and form excellent natural harbors. There are a considerable number of islands, chiefly on the west coast, the largest being Achill. The mountains, generally speaking, rise in isolated masses at a short distance from the coast, the interior having the form of a vast plain, in which are extensive tracts of bog. The Macgillicuddy's Reeks, in the southwest, are the highest, the culminating summit being Carrantual, 3414 feet. The mountains of Wicklow, in the southeast, reach the height of over 3000 feet (Lugnaquilla is 3039). Rivers are not only numerous but are very equally distributed over the surface. The Shannon, in the west, the largest river of Ireland if not of the United Kingdom, is navigable to its source in Lough Allen, forming a waterway of 240 miles. The other rivers of

most importance are the Bandon, Lee, Blackwater, Suir, and Barrow, which enter the sea on the south, the Liffey and the Boyne, entering the sea on the east, the former having the capital at its mouth, the latter being the largest river which discharges itself into the Irish Sea on the east coast; and the Bann and the Foyle, which have their mouths at no great distance from each other on the north coast. Ireland possesses a large number or lakes (or loughs). Lough Neagh, in the northeast, is a quadrangular expanse 17 miles long by 10 broad, and is the largest lake of the United Kingdom. Among the others the lakes of Killarney, in the southwest, are preeminent for beauty, and attract numerous visitors.

Geology and Minerals.—The mountains are formed of vast masses of primary and metamorphic rocks, while the secondary formations spread over the interior. Basaltic rocks are almost entirely confined to the northeast, where they often form colonnades, of which the Giant's Causeway is a celebrated specimen. Granite has its largest development in the southeast, where it forms the great mass of the mountains of Wicklow. It is more sparingly developed in the west and northwest (Donegal), as well as in the northeast. The lower rocks of the Silurian system form no inconsiderable portions of the whole island, covering large portions of the north-northeast and southwest as well as parts of the west. The Old Red Sandstone has its largest continuous development in the county of Cork, but rises to the surface at numerous isolated spots. The rocks next in the series belong to the Carboniferous system; at the bottom of which lies the Mountain Limestone, the most largely developed of all the rocks of Ireland, occupying almost the whole interior. In some cases, particularly in the southwest, the coal measures occupy considerable areas, but the quality of the coal is generally very inferior, and it is worked only to a very small extent, the yearly output being only about 100,000 tons. The strata higher in the geological series than the coal are very partially developed. Of other minerals than coal Ireland yields small quantities of iron ore, lead ore, slate, alum, salt, etc.

Climate.—The climate is on the whole moister, milder, and more equable than that of the greater part of Britain. It is highly favorable to vegetation, and allows plants to winter in the open air that can do so in very few places in Britain; some species of plants also being peculiar in Ireland alone of the British isles, as for instance the strawberry-tree or arbutus, found in the southwest.

Agriculture.—As regards agriculture, Ireland has great advantages, for though there is a great extent of moorland, there is also a very large area of arable surface, covered with a deep friable loam of remarkable richness. Notwithstanding, agriculture on the whole is in a backward state, a result largely due to the smallness of the holdings, and to the evils of overcropping. However, a steady diminution is now taking place in the number of very small holdings. The rearing of live stock and dairy-farming are largely carried on. By far the largest grain crop is oats; the chief green crop is potatoes, which cover an area about one and a half times as large as in Great Britain. Potatoes had become the main food of the people by the end of the seventeenth century, and a potato famine occurred as early as 1739. Another staple crop, especially in the north, is flax. Much benefit very gradually accrued to Irish agriculture from the operation of the Irish Land Act of 1881, the main provisions of which have been briefly summarised under the terms 'fair rent,' 'fixity of tenure,' and 'free sale.' By the first of these every tenant who objects to his rent or the rent the landlord wishes to exact, is entitled to have a 'fair rent' fixed for him by a court, this rent to remain unaltered for fifteen years. By 'fixity of tenure' the law recognises that the tenant has a certain right in his holding in virtue of which he is not to be arbitrarily removed from it without compensation, and which enables him on leaving his farm to obtain the best price he can get for yielding up his possession. The 'free sale' of this right of tenancy is restricted only in so far as that it must be to one person only (except under agreement with the landlord), that the landlord may object on sufficient grounds to the person purchasing, and that he also has the right of preëmption. At the expiration of the fifteen years the landlord may resume possession of the holding on paying the tenant compensation for improvements effected by him, and also paying him the value of his tenant-right, both being determined by the court should the parties be unable to agree. This act, amended and extended in 1887, has been supplemented by the Land Purchase Act of 1903.

Industries and Trade.—Of industrial employments the linen manufacture is the chief and is in a very flourishing condition. It has increased in a remarkable manner within the last fifty or sixty years, and Belfast, its center, has now

become the first city of Ireland. The woolen manufacture at the outset outstripped that of linen; but it was hampered by unjust restrictions imposed by Parliament at the instance of the woolen manufacturers of England. The brewing of porter and distillation of whiskey form important industries. The fisheries employ a considerable number of persons, but far fewer than they should. The salmon fisheries are valuable and are increasing in value. The trade is only of a moderate bulk. The main articles of export consist of agricultural produce, the greater part of which finds its market in Great Britain. These articles include grain, live stock, salt and fresh meat, eggs, butter, etc. Of manufactured articles linen is the chief export; whiskey and porter are also exported. The trade with foreign countries is inconsiderable. The inland trade is much facilitated by the rivers and canals, on the improvement and construction of which respectively large sums have been spent.

Religion.—The prevailing religion is the Roman Catholic. The Reformation never made much progress, and though the Protestant Episcopal Church was established by law it was only the church of a small minority. In 1869 an act was passed for its disestablishment. Previously the clergy were supported by a tithe rent-charge, the proceeds of the church lands, etc., but by the new act, taking effect from January 1, 1871, the property and tithes formerly belonging to the church were vested in commissioners, who had charge of the winding up of the church's financial affairs, and their powers were in 1881 transferred to the Irish Land Commission, who are now engaged in completing the work. Part of the funds thus liberated has been expended on education and the relief of distress. At the head of the Roman Catholic Church are four archbishops, who take the title of Armagh, Dublin, Cashel, and Tuam, and twenty-four bishops. The whole of the Irish Roman Catholic clergy are supported solely by voluntary contributions. The number of priests is 3200, more than half being curates. There are numerous monasteries and convents. The Presbyterian Church is chiefly confined to Ulster, where it may be said, especially in the counties of Down and Antrim, to be the leading religious denomination. Its ministers are supported by voluntary contributions, seat-rents, and church funds. According to the census of 1901 there were in Ireland 3,308,661 Roman Catholics, 581,000 Episcopalians, 453,173 Presbyterians, 62,006 Methodists, and 28,000 members of other persuasions.

Education.—The principal educational institutions are Dublin University and the three Queen's Colleges of Belfast, Cork, and Galway. The Queen's Colleges were formerly connected with an examining and degree-conferring body (Queen's University); but for this a similar body, the Royal University of Ireland, was substituted in 1882, £20,000 being yearly granted from the surplus funds of the Irish Church. The Royal College of Science, established in 1867, supplies a complete course of instruction in science applicable to the industrial arts. The Catholic University of Ireland, established in 1854, consists of University College, Dublin, St. Patrick's College, Maynooth, and several other colleges. The seminaries for the education of the Catholic priesthood are numerous, the most prominent being the College of Maynooth, founded in 1795, and formerly receiving annually from government £26,360, for which, by the Irish Church Act of 1869, a sum of £372,331 was paid in compensation. The General Assembly's Theological College, Belfast, and the Magee College, Londonderry, are Presbyterian colleges. The chief elementary schools are those under the superintendence of the Commissioners of National Education. (See *Britain.*) In 1878 an act was passed setting apart £1,000,000 from the Irish Church surplus fund for the promotion of immediate secular education by means of special examinations, exhibitions, prizes, etc.

Government.—Ireland, by the Act of Union, became in 1801 an integral part of the United Kingdom, and shares in its legislation by means of twenty-eight representative peers in the House of Lords, and 103 representatives in the House of Commons. The representative peers are elected for life by the whole body of Irish peers. The lord-lieutenant, who represents the sovereign, is the head of the executive, and holds his court in Dublin Castle. He is assisted by a privy-council and a chief-secretary, who takes the most active part in the administration of affairs. As in England, the chief legal functionaries are a lord chancellor, a lord chief-justice, and a master of the rolls. The Irish police force is a semi-military body, paid out of the Consolidated Fund.

History.—The beginning of the history of Ireland is enveloped in fable. As in Western Europe generally, the earliest inhabitants are believed to have been of Iberian race, and, therefore, akin to the modern Basques. They were followed by the Celts, different tribes of whom probably arrived at different times, giving

rise to such names as Firbolgs, Milesians, etc. Among these the Scots were the latest, and latterly got the upper hand, so that their name became generally applied to all the inhabitants. There is no evidence that the Irish had the use of letters before the middle of the fifth century, when Christianity and Christian literature were introduced by St. Patrick. Subsequently Ireland became the seat of western learning, and its monasteries were the schools whence missionaries proceeded throughout continental Europe. Its internal condition, however, was far from satisfactory. Divided among a number of hostile kings or chiefs, it had been long torn by internal wars, and for nearly two centuries ravaged by the Danes, numbers of whom settled in the country, when, in the beginning of the eleventh century, Brian Boroimhé united the greater part of the island under his scepter, restored tranquillity, and subdued the northern invaders.

After the death of Brian at the close of the battle of Clontarf, 1014, gained against the Danes and their Irish allies, the island relapsed into its former state of division and anarchy. In this state of matters Henry II of England obtained a papal bull giving him the right to subdue it, and the way was paved to this when Dermot, prince of Leinster, who had been driven from the country, was reinstated by the aid of Richard de Clare (Strongbow) and other Norman nobles. In 1172 Henry entered Ireland himself, and partly through the favor of the clergy and his affability, the great princes did homage to him and acknowledged his supremacy. Many Norman barons and their followers now settled in the country, but the English power was far from being established over it. For long only a part was recognized as English territory (generally known as 'the Pale'), and this was governed by various nobles, subject to a viceroy. The nobles quarreled among themselves, and were very often at open feud. In 1315 Edward Bruce, brother of the Scotch king, landed at the head of a large force, and was crowned king, but was defeated by the English in 1317 near Dundalk. The English power was greatly reduced by this expedition, however, and a number of the barons renounced their allegiance to England, and adopted the Irish language, laws, manners, and customs. This led to the passing of the Statute of Kilkenny (1367), forbidding, under severe penalties, intermarriages between English and Irish, the assumption of Irish names by persons of English blood, the use of the Irish language, the native (Brehon) law, etc. But the English rule became so weak that the viceroy found it necessary to protect the Pale by payments of money to the Irish chiefs, and this state of matters long continued. In the reign of Henry VII (1495) was passed Poyning's Act (so called from Sir Edward Poyning, lord-deputy of Ireland), which provided that all former laws passed in England should be in force in Ireland, and that no Irish Parliament, that is, the Parliament of the English settlers, should be held without previously stating the reasons why it was to be summoned, and the laws it was intended to enact. At the beginning of the sixteenth century the greater part of the island still remained unconquered by the English. The native Irish lived according to their old customs under their own chiefs, and in manners and mode of life were still totally uncivilized.

Henry VIII assumed (by act of the Irish Parliament) the title of King of Ireland, instead of *Lord*, which he had before borne as a vassal of the pope, and the Irish chiefs generally acknowledged his authority; but the change of religion was bitterly opposed, and Mary was easily able to undo all that had been done in this direction by her two predecessors. Elizabeth imposed a Protestant clergy upon the people, and her reign was marked by a series of risings, which terminated in the reduction of the whole island. Great stretches were taken from the Irish chiefs, and distributed among English noblemen and others, who were to settle their new estates with English farmers. Little was done in this way, however, compared with the great plantation of the North by James I, under whom 800,000 acres of land in Ulster were declared forfeited, a large part of this being entirely withdrawn from the Irish, and divided among Scotch or English settlers. In 1641 there began an attempt to shake off the English yoke, in which great atrocities were perpetrated on both sides. In 1649 Cromwell was appointed lieutenant, and energetically, but cruelly, reduced the whole country within nine months. The next struggle was that which followed the Revolution, when James II landed in 1689, and hoped to regain his crown by French and Irish aid. He failed to reduce Londonderry, which held out, enduring the extremity of famine, till it was relieved by some ships from England. In the following year (1690) William III arrived, and on the 1st of July gained a decisive victory over the forces of James on the Boyne, near Drogheda. In 1691 another victory was gained over the Irish at Aughrim in Galway, and in October

Limerick, the last place that held out for James, capitulated, a treaty being concluded at the same time, by which the Catholic Irish were to be allowed the free exercise of their religion. The Treaty of Limerick was ill kept by the English. By a decree of Parliament upwards of 1,000,000 acres were confiscated and divided among Protestants. Cruel penal laws were passed against those who adhered to the Catholic religion. The Catholic ecclesiastical dignitaries were banished; the subordinate priests were not allowed to leave their counties; no Catholic could hold a public office, acquire landed property, enter into a marriage with a Protestant, etc.

Although these laws were not always rigorously carried out, yet they excited great bitterness of feeling, and produced frequent revolutionary associations (*Whiteboys* and others), which mark the history of Ireland. In 1778 the penal laws against the Catholics, though not repealed, were made much more lenient. Catholics were henceforth permitted to acquire landed property, to erect schools, and to observe their own religion under fewer restrictions. In 1782 Poyning's Act was repealed, and freedom of legislation allowed to the Irish, though Catholics were still excluded from Parliament, and did not even have the franchise till 1793. The French revolution had a great effect on the minds of the Irish people, and it was partly through this influence that the Society of United Irishmen was formed, and that rebellion broke out in 1798. Great atrocities were perpetrated, but the rising was speedily crushed. A body of French soldiers, 1500 strong, landed in Killala Bay, but were compelled to surrender.

The British government now resolved to unite the Irish and English Parliaments, and an act providing for the legislative union of the two countries passed the Irish Parliament in May, 1800, and the British Parliament in July of the same year, in virtue of which the union was effected on the 1st of January, 1801. But although this measure bound the destinies of the two countries still more closely, yet it was far from putting an end to the troubles which had so long divided them. In 1829, mainly through the efforts of O'Connell, the Catholic Emancipation act was passed, under which Catholics could take a seat in Parliament and were admitted to most public offices. (See *Catholic Emancipation.*) The Irish national party now tried to repeal the Union, for which purpose O'Connell founded the Repeal Association. This movement collapsed in 1843, and afterwards the potato famine in 1845, and again in 1846, cast all other interests into the background. To mitigate this calamity Parliament granted enormous sums of money; yet thousands died from starvation, and hundreds of thousands emigrated to America. Anarchical outbursts, agrarian murders, and other acts of violence distracted the land. Meanwhile O'Connell died, and his party was replaced by one still more advanced, called the Young Ireland party. In these circumstances the French revolution in 1848 had a great effect upon Ireland. The leaders of the Young Ireland party, Smith O'Brien, Mitchel, Duffy, Meagher, and others, entered into relations with the provisional government at Paris, and the people began openly to exercise themselves in the use of arms. But the rebellion turned out a mere fiasco. After the famine and great emigration a general improvement became visible among the inhabitants. Agriculture revived, and the manufacturing industries began to compete with those of England.

The year 1865 witnessed a new conspiracy designed to separate England and Ireland. This originated in the United States, when the numerous Irish during the civil war in that country hoped for a rupture between it and England, of which they might take advantage. This conspiracy, the members of which called themselves *Fenians* (see *Fenians*), soon spread to Ireland; but before they could take any overt action in that island their design was stifled by the British government (1865–66). The ministry now resolved to do all in their power to render the Irish people loyal and contented; and accordingly the Irish Episcopal Church was disestablished in 1869, and another act was passed to improve the tenure of land, in 1870.

Since 1871 an agitation for what is called Home Rule has made itself prominent. Its chief supporters, designated 'Nationalists,' profess not to desire the severance of Ireland from Britain; what they mainly want, is to have an Irish Parliament for matters exclusively Irish. In 1880 Ireland became the scene of an agitation carried on mainly by a body known as the Land League. The movement was so lawless that two special acts, a 'coercion' act and a peace preservation act, were passed. Still further to redress Irish grievances a land act was also passed in 1881, the chief provisions of which have already been mentioned. The Land League was suppressed, but a body called the National League was soon organized in its place. In 1885, 86 Nationalist members (under the lead-

ership of Mr. Parnell) were returned to Parliament, and their pressure on the government led to Mr. Gladstone's scheme in 1886 and 1893, by which Ireland was to receive a Parliament of her own and the Irish members to be withdrawn from the Imperial Parliament. This and the accompanying scheme for the buying out of Irish landlords were rejected by Parliament and the majority of the constituencies. The third Home Rule Bill, introduced by Mr. Asquith in April, 1912, and finally enacted into law, May 25, 1914, met with violent opposition in parts of Ulster where the population is Protestant. Preparations were made for armed resistance, and a volunteer army of 100,000 drilled for service; but the outbreak of the European War in 1914 put an end to demonstrations. (See *Britain* and *Home Rule*.) A serious revolt by a faction calling themselves the Sinn Fein Society (meaning '*Ourselves Alone*'), began April 24, 1916, Dublin being its chief seat. It was vigorously suppressed after a week's time. It caused the loss of property estimated at $1,900,000, and the lives of 340 soldiers and citizens; 1000 were taken prisoners of whom fifteen were executed, including Sir Roger Casement, a former British consul and leader of the uprising, and Padraic (Patrick) Pearse, who was provisional president of the short-lived Republic of Ireland, which only lasted a week. In 1918 other leading Sinn Feiners were interned in England.

In 1898, an Irish Local Government Bill was passed, and in 1903 a Land Purchase Bill was enacted, which promised to go far in relieving the distress of the agricultural population. In this the government set aside the sum of £100,000,000 for the purpose of buying the farming areas from landlord holders and giving to tenants, subtenants, or the people at large the privilege of purchasing and holding farms as their own, easy terms of payment, extending over many years, being provided. Conscription was not applied to Ireland during the European war, 1914-15, but many Irishmen volunteered for service. The growth of the Sinn Fein (q. v.) in 1917 and 1918 was phenomenal, and at the election held at the conclusion of the war the Sinn Fein party swept three of the four provinces and declared for a republic.

Language and Literature.—The Irish language belongs to the Gaelic or Gaedhelic branch of the Celtic stem of languages, being closely akin to the Gaelic of Scotland and the Manx, and more remotely allied to the British dialects (Welsh, Cornish, and Armoric). The modern dialects or varieties of Irish, which differ very much from the ancient, are spoken by the rural classes in Connaught and Munster, and the more remote parts of Ulster. In 1901 there were 64,000 people in Ireland who spoke Irish only, and over 885,000 who could speak it along with English. Gaelic may be considered a comparatively modern form of ancient Irish.

Irish literature is varied and extensive. One of the earliest historic pieces is a metrical life of St. Patrick. Among the most important of the heroic tales is the *Táin Bo' Cuailnge or Cattle Spoil of Cualnge*, the center of a series of epic tales. A number of poems and tales, forming a cycle of their own may be called Ossianic; most of them are comparatively modern. The glosses written into Latin works of Irish ecclesiastics, in the monasteries on the Continent founded during the seventh and eight centuries, are among the oldest specimens of the language. Many bardic remains belong to the period of the English conquest, but after that date Irish poetry declined. Many bards, however, who were still maintained by the native chiefs, helped by their songs to keep up a national feeling hostile to the English domination. The native authorities for Irish history may go back to St. Patrick at the very earliest. The oldest of kings dates from the middle of the eleventh century. The oldest and by far the ablest annalist, whose works have been at least partially preserved, is Tighernach O'Brian, who belonged to the royal family of the O'Connors of Connaught. He died in 1808. The other chief annals are the *Ulster Annals*, the *Annals of Innisfail*, and the *Annals of the Four Masters* (from its four conjoint compilers). The most important Irish manuscripts are contained in the library of Trinity College, and the Royal Irish Academy, Dublin, in the Bodleian Library, and the British Museum. Among modern Irish writers may be mentioned the leader of the Celtic Renaissance, George Russell, 'A.E.'; the novelist, George Moore; the poet, William Butler Yeats; the dramatist, George Bernard Shaw; and the various playwrights of the Irish National Theater, including Yeats, J. M. Synge, Lady Gregory, etc.

Ireland, JOHN, Archbishop, was born in County Kilkenny, Ireland, in 1838, and came to the United States in his boyhood. He studied theology in France, served as chaplain in the Civil War, and afterwards became rector of the cathedral at St. Paul, Minn. In 1888 he was made archbishop of St. Paul. Yale conferred the degree of LL.D. upon him in 1901. He died Sept. 26, 1918.

Irenæus (ir-e-nē'us), SAINT, Bishop of Lyons, a pupil of Polycarp, was probably a native of Smyrna, and born between 120 and 140 A.D. He is generally supposed to have suffered martyrdom at Lyons, in the persecution under Septimius Severus in 202. He actively opposed the Gnostics. Only some fragments remain of his *Libri V adversus Hæreses*, written in Greek. There is, however, a very ancient Latin version.

Irene (ī-rē'nē), Empress of Constantinople, was born at Athens about 752 A.D., and in 769 married Leo IV, after whose death she (780) became regent during the minority of her son, Constantine VI. She had during the life of her husband been banished from the imperial palace for her devotion to the worship of images; but in 788 A.D. a council of bishops held at Nice under her auspices restored image worship in the Eastern Church. When Constantine had grown up he took the reins of government himself, and reigned alone seven years, when his mother had him arrested and his eyes put out, and he was at last murdered. Irene was the first woman who reigned over the Eastern Empire. She had ordered many nobles into banishment to secure more firmly her power, but Nicephorus, her treasurer, through their influence gained the imperial throne, and exiled her in 802 to the isle of Lesbos, where she died of grief in 803.

Ireton (ir'ton), HENRY, a Parliamentary general in the English revolution, was born in Nottinghamshire in 1610. Descended from a good family, he was brought up to the law; but when the civil contests commenced he joined the Parliamentary army, and by the interest of Cromwell, whose daughter Bridget, he married in 1646, he became commissary-general. He commanded the left wing at Naseby, which was defeated by the furious onset of Rupert, and himself made prisoner, but some hours after he recovered his liberty. He was an implacable enemy of the king, had a principal hand in framing the ordinance for his trial, and sat himself as one of the judges. Ireton accompanied Cromwell to Ireland in 1649, and was left by him as lord-deputy. He reduced the natives to obedience with great rigor, but cruelly. He died of the plague before the walls of Limerick, 1651, and was buried in Westminster Abbey 1652.

Iriartea (ir-i-ar-tē'a), a genus of South American palms, tall-growing trees, of which one species, *I. exorrhiza*, the pashuiba or paxuiba palm, yields a hard kind of wood used for building, and exported for umbrella handles, etc.

Iridaceæ (ir-i-dā'se-ē), a natural order of endogenous plants, mostly herbaceous, and with equitant leaves (that is, leaves overlapping entirely in a parallel manner), three stamens with extrorse anthers, and an inferior ovary; natives chiefly of the middle parts of Europe and North America and the Cape Colony. They have beautiful flowers, and include the iris, gladiolus, crocus, ixia, etc.

Iridescence (ir-i-des'ens), the sheen of mother-of-pearl and other objects which have a finely-grooved surface. It is due to the interference between the waves of white light reflected from different levels in the grooving, the reflected light presenting colors which vary according to the angle of reflection.

Iridium (ī-rid'i-um), a metal of a whitish color, not malleable, discovered in the black scales which remain when native platinum is dissolved in aqua regia; specific gravity about 22.4; symbol Ir. It takes its name from the variety of colors it exhibits while dissolving in hydrochloric acid. It is the most infusible of metals. It forms a number of alloys, one of which, iridosmine, occurs native. The alloy with gold is malleable and much resembles gold in appearance, while that with copper is very hard, pale red in color, and ductile.

Iridosmine (ī-ri-dos'min), IRIDOSMIUM, a native compound of iridium and osmium, forming an osmide of iridium, in which the iridium is partly replaced by platinum, rhodium and ruthenium. It is used for pointing gold pens, and iridium is obtained from it.

Iris (ī'ris), in Greek mythology, the fleet golden-winged messenger of the Olympian gods. Iris was originally the personification of the rainbow, though she does not appear as such in the Homeric poems. She is represented with wings attached to her shoulders and a herald's staff in her left hand, representative of her office of messenger.

Iris, the muscular curtain stretched vertically in the anterior part of the eye, perforated by, containing, and forming the colored circle around the pupil. See *Eye*.

Iris, a plant that gives name to the natural order Iridaceæ, and is also called flag and flower-de-lis. The plants of the genus *Iris*, some of which are medicinal and others merely ornamental, are found in many localities over Europe,

Asia, and America. They usually grow in wet places, bearing flowers of various colors, but the prevailing tint is blue. The stinking iris (*I. fœtidissima*) of southern England has purple flowers and ill-smelling leaves. Orris-root consists of the root-stock of some species, as *I. florentina*. The most admired species are the Persian (*I. persica*), the snake's head (*I. tuberōsa*), the Chalcedonian, the Spanish, and the English.

Irish Moss. See *Carrageen.*

Irish Sea, the sea between Great Britain and Ireland, north of St. George's Channel and south of the North Channel, 130 miles long and about 60 miles wide. It contains the islands of Anglesey and Man.

Irish Terrier (ter'i-er), a breed of the terrier class that has come into great popularity. This dog is held to be indigenous in Ireland, and is not the result of any cross, though the breed has been greatly developed and improved largely since 1874, when it began to attract attention at the bench-shows. The color of the coat went through various selective changes from lint-white, gray, black-and-tan, and brindle, to bright red. Red, or wheaten color, is now the established standard for this breed. The principal points of the Irish terrier are: A long head, with flat skull, narrow between the ears; strong and muscular jaws; the jaws and head together giving a square aspect of conformation. Ears V-shaped, small, drooping forward close to cheek. Eyes, dark hazel, small, full of fire and intelligence. Back, straight and strong. Legs, straight. Tail, usually docked, free of feather and carried jauntily. Coat, hard and wiry. Weight, 22 to 24 pounds. In temperament the Irish terrier is one of the gamest, most loyal, and, to those he knows, one of the best-tempered of dogs.

Iritis (ir-ī'tis), inflammation of the iris of the eye. Iritis may arise from wounds in the iris, from too prolonged continuous use of the eye, or from constitutional predisposition induced by syphilis, scrofula, etc.

Irkutsk (ir-kötsk), a town in Southern Siberia, capital of government of same name, at the junction of the Irkut with the Angara, about 40 miles from Lake Baikal. It is the residence of the governor-general of Eastern Siberia, has a cathedral and a number of public buildings. Manufactures woolens, linens, leather, etc., and carries on a good trade in tea and other articles imported from China, furs, etc. Pop. 108,166.—The government, which is bounded by Yeniseisk, Yakutsk, Trans-Baikalia, Lake Baikal, and Chinese Turkestan, has an area of about 287,000 sq. miles, and a population of about 500,000, a number of whom are persons banished from Russia.

Iron (ī'ërn), the most universally distributed and the most generally applied of all the metals (Lat. *ferrum*; symbol Fe). It is the most tenacious of the metals, having a breaking strain of 106,000 lbs. per sq. inch of section; and two pieces can be perfectly welded together when raised to a white heat. It is so ductile that it can be drawn into wire as fine as the human hair. It occurs chiefly in the earth's crust in combination with oxygen, but it is also found in combination with several other elements, and sometimes, although rarely, *native* or in the metallic state. There are two varieties of native iron, the *telluric* and the *meteoric*. The former occurs in small quantities only, in grains and thin plates, associated with other metals, principally lead and copper. It is of a white color, as can be seen on a freshly fractured surface, but in contact with air is of a steel-gray color. Meteoric iron is a pale steel-gray, very malleable and tough, flexible but not elastic. It has been found in masses in various parts of Europe, Africa, and America, and derives its name from having traveled through the air in the form of meteors, and having been brought to the earth from outside space by the attraction of gravity. All the specimens of meteoric iron analyzed contained nickel, most of them also cobalt, besides copper, manganese, and other minerals.

It is from one or the other of its *ores* that the iron of commerce is obtained. The ores of iron are very numerous, but the oxides, carbonates, and sulphides are the most important, and, from the manufacturing point of view, the following are the most valuable:—1. *Magnetic Iron Ore.* This, the richest of all the ores of iron, contains, when perfectly pure, 72.41 per cent. of metallic iron. It is iron-black in color, with a metallic lustre, highly magnetic (especially the specimens of it that are called *native lodestone*), and extremely infusible. It is most commonly found in palæozoic rocks, generally in beds and large masses. Some mountains in Lapland and Chile consist almost entirely of this variety of ironstone. In Sweden it exists in great abundance and purity, and good bar-iron is produced from it. It is plentiful also in Norway and Russia, the East Indies and China, and in North America occurs in beds in granitic mountains in the northeast part of the United States, and in many other

tracts. Various parts of Great Britain also possess deposits of magnetic ore. Its specific gravity varies from 4.24 to 5.1. 2. *Hæmatite* or *Specular Iron Ore, Red Hæmatite.* This mineral in its purest state contains about 70 per cent. of iron. Specular ore is a deep steel-gray in color, with a brilliant, and often iridescent tarnish externally; its fracture exhibits a brilliant luster. It is opaque in large fragments, but the edges of small thin scales are of a blood-red color by transmitted light. It occurs crystalline and lamellar, hard and massive, earthy and friable. This ore is found in the older rocks, especially gneiss and granite, both in beds and veins. Great Britain has vast deposits of hæmatite in Cumberland, Lancashire, Devonshire, and Cornwall, the red ores being chiefly utilized by British smelters. France, Germany, Russia, and North and South America, have large deposits of the crystalline variety. 3. *Brown Iron Ore, Brown Hæmatite.* This variety consists essentially of hydrated ferric oxide, and contains when pure about 60 per cent. of iron along with about 16 per cent. of combined water. Brown iron ore occurs plentifully in France, Germany, Belgium, and in England, chiefly in the Forest of Dean, in Devonshire, Lincolnshire, and near Durham. Brown hæmatite is generally a yellow powder, sometimes passing into a brown or velvet black. It affords a very malleable and much harder iron than the red ore, and very good steel. Before the blowpipe it blackens and magnetizes but after calcination and cooling the powder becomes red, and in this state is much used for polishing metals. There are also many varieties of brown hæmatite, to which distinctive names are applied. *Bog iron ore* is a variety of brown hæmatite which occurs in most European and many American countries, and is so named from its being chiefly found in marshy places. It is considered to be of recent formation, and the iron obtained from it can but rarely be used for sheet-iron, and never for wire. 4. *Spathic Iron Ore.* This mineral, as the name implies, resembles rather an earthy than a metallic substance, and consists essentially of ferrous carbonate. In its purest state it contains 48.27 per cent. of iron, and occurs in the older rocks and in limestone strata in veins and beds. The chief deposits of this mineral are in Styria and Westphalia, and large deposits exist also in the Pyrenees, in New Grenada, and in Great Britain. This ore is very valuable for making steel, being free from those substances which act injuriously in its manufacture. Spathic ironstone is often associated with considerable quantities of clayey and coaly matter; when the former substance predominates the ore is known as *argillaceous* or *clay-band ironstone;* when the coaly matter is in excess the ore is called *carbonaceous* or *black-band ironstone.* These varieties occur in most of the coal-fields of Great Britain, and supply the greater part of the iron produced there. It is also worked in France at the coal-fields of the Gard, of the Aveyron, and near St. Etienne. In America this ore also occurs, widely distributed. The color of the clayey carbonates of iron varies from reddish-brown through yellow-brown to dark brownish-black. 5. *Iron Pyrites.* This mineral, when pure, consists of 53.33 per cent. of iron combined with 46.67 per cent. of sulphur, and is the most widely distributed of all the ores of iron. It occurs in many forms disseminated in rocks, veins, and beds, investing other minerals, sometimes inclosed in them. The ordinary color is brass-yellow, but owing to decomposition often assumes grayish and brownish tints. Before the blowpipe it melts, giving out a sulphurous odor, and leaving a blackish slag, which is magnetic. This ironstone is chiefly used as a source of sulphur, but in Siberia it is worked for the small percentage of gold it contains.

Before the ores pass into the smelter's hands they are subjected to the preliminary process of *calcination* or *roasting.* The object of this operation is to separate water, carbonic acid, sulphur, and other volatilizable substances from the ore, and at the same time to render the ore more porous. This is now generally effected by placing the ironstone over a coal-fire at the bottom of a kiln; when the ore is red-hot a fresh layer, 8 or 9 inches in depth and mixed with coal, is added, and so on until the kiln is filled. When the bottom layer is cold it can be withdrawn, and the process thus becomes continuous. Formerly ores were roasted in piles in the open air, but this wasteful and irregular method is now only resorted to in localities where time and fuel are of little consideration. Ironstone loses from 25 to 30 per cent. of its weight by calcination; the black-band variety, which almost supplies its own fuel, from 40 to 50 per cent.

The *smelting* of the iron is the next process, that is, the production of the metallic iron from the ore. The iron-smelter must carefully consider the nature of the ores to be treated, and the due admixture of different varieties; the most suitable fuel; the production and maintenance of a high and even temperature; and he must also select such materials

to mix with the ores as shall form with the non-essential constituents of the iron-stone a slag which shall remove all hurtful ingredients, being so liquid as to float on the surface of the molten iron and flow easily from it. The most advantageous combination of ores can only be determined by experience, but as regards fuel there is generally no choice. Until the beginning of the seventeenth century charcoal was exclusively used for iron-smelting, but coal and coke have now taken its place, except in those countries where forests still abound and charcoal can be procured readily and cheaply. Chief among iron-smelting appliances is the blast-furnace, and the great progress made in the production of pig-iron during the past 30 years is largely due to better constructed furnaces. In those of the most recent type the waste gases of the furnace are utilized for raising heat and steam, with a consequent large saving in fuel, and the residual or by-products which were formerly lost are also collected, all tending to reduce cost of manufacture. (See *Blast-furnace.*) The molten iron, as it runs from the furnace, is conducted along channels excavated in strong binding sand into molds of the same material, in which it solidifies, forming what is known as *pigs*. For casting purposes the pig-iron is generally melted in a special furnace, called a cupola furnace. This apparatus consists of a cylindrically-shaped furnace, varying from 7 to 10 feet high, and having an internal diameter of about 3½ feet; it is composed of thick iron plates strongly riveted together, protected inwardly by a layer of binding sand about 9 inches thick, the whole being lined with fire-clay bricks. See *Casting*.

To obtain *malleable* or *wrought iron*, it is necessary to free the pig-iron from the sulphur, phosphorus, silicon, and excess of carbon it contains, as these substances lessen the tenacity of the iron, and render it unfit for rolling into bars or plates. But a small quantity of carbon (under 1 per cent.) is essential to the formation of good malleable iron; perfectly pure iron would be too soft. The means by which the elimination of foreign materials from, but retention of a small amount of carbon in, the iron are accomplished are partial oxidation of the iron, succeeded by the removal of the foreign substances in the form of oxides, partly by volatilization and partly by combination with the already oxidized iron in the form of slag. This is done by the process of *puddling*. Formerly the iron-puddler submitted the pig-iron to a refining process previous to passing it into the puddling-furnace, but since the introduction of Danks' and other furnaces, and the substitution of machine for hand-labor, this preliminary process has been generally abandoned. In the ordinary puddling-furnace there is a hearth, on which the pig-iron is placed, and a grate separated from it, in which the fuel is placed. In this furnace the iron is subjected to a great heat, but it is only the heated gases that are allowed to play upon the metal, the shape of the furnace being designed to throw the heated gases down on to the surface of the molten mass on the hearth. In the furnace there is a suitable aperture through which the puddler thrusts his rake or *rabble*, and so stirs up the metal, thus assisting in the process of oxidation. When the iron is sufficiently purified the puddler works it together into balls or *blooms* weighing each about 60 lbs. When the whole of the metal has been collected into blooms the door of the furnace is closed, and the temperature is raised to a full welding heat. The blooms are then carried to a powerful squeezer or to a steam-hammer. The melted slag is thus forced out of the ball, which is at the same time welded into a compact mass of metal, ready to go through the *puddling rolls*, which consist of grooved iron cylinders. These cylinders revolve in opposite directions, so that the metal in passing through them is powerfully compressed, whereby any slag remaining in it is squeezed out. The iron while still hot is cut into pieces by a pair of shears, which pieces are bound together by wire, and subjected to the operation of *re-heating* or passing through the *mill-furnace*. The bars are heated to a welding temperature, then again passed through the rolling-mill, whereby they are converted into a single bar. This bar may be again bent upon itself and again rolled, thereby producing what is known as *best bar* or *wire iron*. This iron is very tough and tenacious; it may be bent or even tied in a knot when cold without exhibiting the least sign of fracture. If iron breaks off when bent in a cold state it is said to be *cold-short*; while if it stands this treatment, but becomes brittle at a high temperature so as to be unfitted for welding, it is called *red-* or *hot-short*. The presence of foreign elements influences these two properties of iron in a marked degree; thus a very small amount of sulphur, even such a quantity as .05 per cent., causes bar-iron to become red-short. Bar-iron possesses a specific gravity varying from 7.3 to 7.9. The melting point is estimated at being about 2900° Fahr., and of cast-iron 1920° Fahr.

By the Siemens regenerative and other similarly constructed furnaces, malleable iron and steel are now prepared directly from the ore. In recent years 'malleable castings' have been introduced. The castings are made of ordinary cast-iron, and rendered malleable by the removal of the carbon. In large cast-iron pots the castings are laid with alternating layers of powdered red hæmatite, and the whole is kept at a temperature of about 1650° Fahr., or cherry-red heat, for 72 hours. On cooling, the castings are found to consist of nearly pure iron, and to be perfectly malleable, and, therefore, workable.

If iron is heated frequently or carelessly it ceases to be fibrous and loses its tenacity; it is then said to be *burnt*. To restore it to its original condition, a fresh and very careful forging is generally needed. This may also be done by heating the piece of iron to bright redness, and plunging it into a boiling saturated solution of sea-salt until it is of the same temperature, about 230° Fahr. After this operation the metal can be easily doubled in the cold.

It is not always easy to draw the line between iron and steel, and many varieties of metal come into the market under the name of steel which in reality are alloys of iron with other metals, such as wolfram, manganese, chrome, etc. It is admitted by all metallurgists that one of the characteristics of true steel is that it hardens when heated and then suddenly cooled in water; but wolfram steel, for instance, exhibits the very opposite property. Experienced workmen can distinguish iron from steel by the musical note emitted on striking. A more certain method consists in treating the metal with diluted nitric or sulphuric acid. If the surface remains unaltered, or nearly so, when touched with a drop of either acid, the metal is iron; in the case of steel a black mark will be left, owing to the liberation of carbon.

Pure iron is a silver white metal, with a strong lustre, very tenacious, capable of receiving a high polish, and so soft as to be easily cut with a knife. It may be obtained by heating nitride of iron in a stream of hydrogen, or by electrolytic precipitation but, according to Matthiessen, however metallic iron is obtained it always contains a trace of sulphur. In its chemical analogies iron is closely related to the metals cobalt, nickel, and chromium; it belongs to the hexad group of metals, and forms a large series of salts. The atomic weight of iron is 55.9 or 56. Iron dissolves slowly in dilute nitric acid; if not diluted, this acid rapidly oxidises it. Dilute sulphuric acid dissolves this metal easily, but if concentrated, it has no action in the cold, whereas, on heating to ebullition, the iron is dissolved with evolution of sulphurous acid gas. Iron is also dissolved in hydrochloric acid and in aqua regia.

The principal iron manufacturing countries are the United States, Great Britain, Germany, France and Belgium. The production of iron and steel has made rapid strides in the United States. This country has now a much larger output than any other, and from being an importer has become a great exporter. Great beds of iron ore occur in Pennsylvania, West Virginia, Tennessee, Alabama, in Michigan and other States bordering Lake Superior, in Missouri, Arkansas, Wyoming and some other States. There are immense beds of bog-iron in Washington. Pennsylvania is the greatest iron-producing State. For the manner in which iron is converted into steel, see *Steel*.

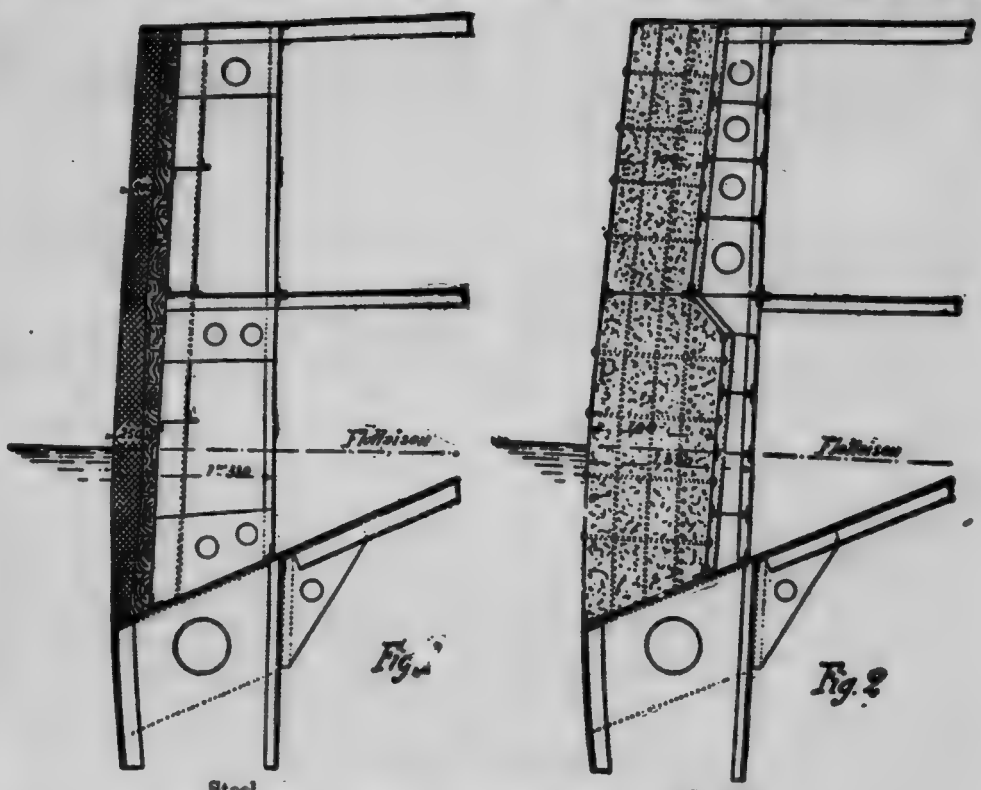
Besides its numerous other uses, iron is of great value medicinally, especially as a tonic and restorative of the blood. Hence it is very efficacious in anæmia and chlorosis, in rickets and scrofula, and in convalescence from various illnesses. In neuralgia it is often beneficial, and especially when given along with quinine. Some of its preparations have a styptic or astringent effect. It is given in many forms, as the carbonate, citrate, sulphate, perchloride, etc. Mineral waters often owe their useful properties to iron, being then known as chalybeate springs.

Iron-bark (*Eucalyptus resinifera*, one of the 'gum-trees'), an Australian tree growing to the height of 100-150 feet, with heavy, strong, and durable timber. It is, however, difficult to work and apt to be 'shaky.'

Iron and Steel-clad Vessels, a term now applied to all vessels protected from the fire of heavy guns by thick plates of iron or steel, usually backed by wood. The iron-clad is comparatively a modern invention, and it was not until 1859 that Britain began to introduce such vessels into her navy; but since that time greater changes have taken place in the construction of warships than in all previous ages. The idea of protecting vessels by iron was first practically applied to some floating batteries by the French in the Crimean war. The shells thrown by the cannon then in use were calculated to make terrible havoc among the crowded crews of the wooden battleships of that period and some extra protection became necessary. The first iron-clad, *La Gloire*, was constructed by the French in 1858, a wooden ship

sheathed from end to end in 4½-in. iron plates, an armor then considered invulnerable. The first British iron-clad, the *Warrior*, was launched in the Thames in December, 1860, an iron frigate with air-tight compartments, 4½-in. iron armor and 18-in. wood backing, the two ends of the vessel unprotected. It remained, however, for the United States to demonstrate the practical value of this new idea in naval warfare. This took place in 1862, when the first battle ever fought between iron-clad ships took place in Hampton Roads, the Confederate broadside-ship *Merrimac* engaging with the *Monitor*, the turret-ship devised by Captain Ericsson. The result of this memorable conflict, in which neither vessel suffered seriously and the crews escaped almost unhurt, was a practical lesson in naval warfare that overturned all older ideas and put an end to the career of wooden warships. Throughout that war the value of the new idea was abundantly proved by the use of iron-clad river boats and turreted monitors in ocean and harbor conflict, and after the close of the war the principal nations set themselves actively to work in building fleets of iron and steel-clad war-vessels. This was especially the case with England and France, the remaining nations showing much less alacrity and the United States giving little signs of following up the lesson it had taught. The American *Monitors* had proved the value of the turret method of carrying and working guns. In this the heavy guns were carried in revolving iron turrets of great strength, which rose above the deck, having openings only for the muzzles of the guns. This was quickly applied to the new British ships, while the French adopted a new idea, known as

A, Iron plating. B, Teak backing. C. Ship's side.



Steel Cement

Comparative Diagrams of Cement Armor and Steel Armor

the barbette method. In this, open towers or turrets rising above the deck were employed, the heavy guns firing over the edge of the turrets, and being in some cases so mounted that they could be lifted to fire and lowered again, there being thus little danger to the crew in loading them. The principal advantage of this type was the height at which guns could be carried above the water-line; this, however, being offset by a considerable danger to guns and crews. As for the old broadside method of carrying guns, this practically vanished except in the case of the minor armament and the machine guns, which were necessarily more exposed.

The basis of all protection on the modern war vessel is the protective deck, and it is common to the battleship, armored and protected cruisers and many gunboats. It is a heavy steel deck covering the whole of the vessel at or a little above the level of the water-line, extending the entire length of the ship and firmly secured at the ends to the heavy stem and the stern posts. At the sides it usually slopes, meeting the sides of the ship 3 or 4 feet below the water-line. Below this heavy deck lie the vitals of the vessel, the boilers and machinery, the magazines and the shell rooms, the ammunition passages and all the parts where an explosion would be most dangerous and would create the greatest havoc. For safety every opening on this deck is covered with a heavy steel grating to prevent, as far as possible, fragments of shell from passing below. The most vulnerable part of the vessel is her water-line, for, if a shell should enter and explode here, tearing a large hole, the vessel would quickly capsize and sink; it is here, therefore, that the heaviest armor, called the water-line belt, is usually placed. A warship might as well be sunk, however, as rendered useless in battle, and the one thing that modern naval battles have shown, is the absolute impossibility of working the guns when they are exposed to a modern battery of rapid-fire and automatic guns; as a result of this all the later battleships, armored cruisers and protected cruisers alike, have increased the protection of the broadside batteries and exposed gun positions, even at the expense of the water-line belt. The foregoing description, in a general way, portrays the disposition of armor usually employed on the battleship type, but it may be considered to apply as well to armored cruisers, although the latter are given greater speed at the expense of protection and armament. The design and building of battleships shows a constant development. Each new vessel is, in many respects, an improvement on her immediate predecessor; there is some uncertainty, however, as to the best type. The trend of development has been in the following directions: for the battleship, a reduction in the size of the largest guns, made possible by improvements in material and higher velocity of projectiles; an increase in the size of rapid-fire guns; a much improved quality of armor, with a greater proportion of the ship covered by same; an increase in speed and fuel capacity, and a saving in machinery weights due to the introduction of the water-tube boiler and to a generally higher grade of material; the increasing use of oil as fuel, and, finally, a gain in size of the whole vessel.

Iron Cross, a Prussian order, instituted March 10, 1813, by Frederick William III, to be conferred for distinguished services in war. It was made of iron to commemorate the grim 'iron' period at which it was created. The decoration consists of a Maltese cross of iron, edged with silver, and is worn round the neck or at the buttonhole. The order was revived by William I in 1870, on the eve of the great war with France. The grand cross, a cross double the size, is presented exclusively for the gaining of a decisive battle or the capture or brave defense of a fortress.

Iron Crown, a golden crown set with precious stones, with which anciently the kings of Italy were crowned. It has received the above name from an iron circle in it, forged, according to tradition, from a nail of the cross of Christ. The order of the Iron Crown was founded in 1809 by Napoleon, as king of Italy, and refounded seven years later as an Austrian order of civil and military merit.

Iron Gate, a narrow part in the course of the Danube below where it leaves Austrian territory and becomes the boundary between Servia and Roumania. The water rushes through it in dangerous rapids and eddies, rendering navigation serious and formerly impossible.

Iron Hat, a headpiece of iron somewhat hat-shaped, worn as armor from the twelfth to the seventeenth century.

Iron Mask, THE MAN WITH THE, an unknown personage kept in various French prisons, who for a long time excited much curiosity. All that is known of him is that he was above middle height, of a fine and noble figure, and delicate brownish skin, that he had a pleasant voice, was well educated, and fond of reading and guitar playing, and

that he died in the Bastile in 1703. The mask he wore seems to have been of black velvet, not iron. Conjecture has given him many names. He was stated to be in turn the Count of Vermandois (a natural son of Louis XIV and De la Vallière), the Duke of Beaufort, the Duke of Monmouth, the son of Anne of Austria (mother of Louis XIV) by some favorite, and twin-brother of Louis XIV, but all these assertions have been unable to stand the test of thorough investigation. What seems most probable is that he was Count Girolamo Matthioli, first minister of the Duke of Mantua, who had betrayed the interests of Louis XIV by failing to secure for him, as he had pledged himself to do, in consideration of a large bribe, possession of the fortress of Casale, which gave access to the whole of Lombardy. For this offense the court of Versailles lured him to the French frontier, secretly arrested and imprisoned him in the fortress of Pignerolo. The secret was preserved so carefully, on the supposition that Matthioli was the ill-fated prisoner, because his seizure and detention were flagrant violations of international law and likely to cause trouble.

Iron Mountain, a city of Michigan, capital of Dickinson county, 51 miles w. of Escanaba. It was organized in 1888 from part of Breitung township, has extensive iron mines and ships large quantities of excellent ore. Pop. 9216.

Irons, shackles, fetters, or bilboes for the feet, especially such as are used on board ship.

Iron-stone, a general name for ores of iron, or for some of them, as the argillaceous carbonate or clay iron-stone.

Ironton, a city, capital of Lawrence county, Ohio, on the Ohio River, 140 miles above Cincinnati. It is the center of an iron, coal and cement district, has various iron industries, and has a large lumber trade and an extensive river commerce. Pop. 15,000.

Iron-wood, a name given to various trees from the quality of their timber. The iron-wood or hop-hornbeam of America (*Ostrya virginica*), nat. order Cupuliferæ, is a tree with a trunk not exceeding 6 in. in diameter, with very hard wood, so heavy that it sinks in water, and foliage resembling that of birch. The species of the genus *Sideroxylon*, known as iron-wood, are natives of the tropics and also of New Zealand, the Cape, etc. The *S. inerme*, or smooth iron-wood of the Cape, has long been cultivated in the greenhouses of Europe. *Diospyros Ebenum* (the ebony) is also named iron-wood, as is the *Metrosideros vera* of Java.

Ironwood, a city of Gogebic county, Michigan, 6 miles s. w. of Bessemer. It has ironworks and lumbering industries. There are rich iron mines in the vicinity and valuable timber.. Pop. 12,821.

I'rony (Gr. *eirōneia*, dissimulation), a form of speech in which the meaning intended to be conveyed is contrary to the natural meaning of the words. Irony, as a rhetorical device, becomes a most effective weapon for ridiculing an antagonist.

Iroquois (ir'u-kwa), the joint name given by the French to a once powerful confederacy of six North American Indian tribes (Mohawks, Oneidas, Senecas, Onondagas, Cayugas and Tuscaroras). They formerly resided on the Mohawk River, and extended their conquests to the Mississippi and beyond the St. Lawrence. Warlike and well organized, it is probable that but for the settlement of the whites they would have secured dominion from Canada to the Gulf of Mexico. They came into early conflict with the French and proved a barrier to their southward advance from Canada. Some of the tribes are now extinct, some have made considerable advances in civilization, while o'hers have fallen into a state of squalid misery. Part of the Canadian Indians are Iroquois.

Irradiation (ir-rā-di-ā'shun), that effect on the eye through which brilliantly illuminated white surfaces and self-luminous bodies, when emitting white light, appear to the eye much larger than they really are.

Irrational Quantities (i-rash'un-al), or SURDS, are quantities which we cannot exactly determine, because they cannot be expressed in terms of a primary unit. Thus $\sqrt{2}$ is an irrational quantity, being equal to 1.4142... with an indefinite number of decimals. The ratio of the circumference of a circle to its diameter is an irrational quantity, 3.14159...

Irrawaddy (ir-rā-wā'di), IRAWADI, a large river traversing Lower and Upper Burmah from north to south, falling into the Indian Ocean by various mouths and forming a great delta. Its source is in East Tibet. The Irrawaddy is the main artery of Burmah, the bulk of the trade is carried on by its means, the valleys through which it flows are the most fertile and populous, and on its banks are the principal towns (Mandalay, Ava, etc.), with Rangoon and Bassein on two of its mouths. The length of the river is about 1200 miles.

Irredentism, as used in Italy is applied to the policy that has for its object the reclaiming of certain sections of territory peopled by Italians but under the government of Austria-Hungary. The Italian phrase, Italia Irredenta, so frequently employed during the war, means 'unredeemed Italy.' After 1861, when the present kingdom of Italy was established, the Papal States, Venetia, the district around Trieste and the district around Trent, were still—though inhabited mainly or in part by Italians—not included in the kingdom. Venetia and the Papal States were annexed in 1868 and 1870. This process of winning Italy from foreign control came to be called irredentism, and after 1870 the term *Italia Irredenta* was applied to Trieste and the Trentino, these being territories still unredeemed. Irredentism steadily declined following the inclusion of Italy in the Triple Alliance in 1882, but gained in force after the annexation of Bosnia and Herzegovina by Austria-Hungary in 1908. 'For Greater Italy' was the slogan that inspired the gallant Italian soldiers in their spectacular attack on the Austrians in 1917 and 1918, which succeeded in reclaiming the whole of the Irredenta. (See *European War, Italy.*)

Irrigation (ir-i-gā'shun), the art of increasing the productiveness of soils by the artificial supply of water to them. This is as old as agriculture, and references to it exist in very early records, especially in Egypt, India and China. In countries with very small rainfall, and subject to droughts, agriculture without irrigation would be uncertain and unprofitable. For this reason the British government has promoted extensive irrigation works in India. The greatest irrigation work is the Ganges Canal, 445 m. long. Irrigation has long been practiced in Turkestan and it was the basis of the Babylonian kingdom of the far past. In the south of Europe, particularly in Italy and Spain, irrigation works of a high order have existed from ancient times. In the western States it is largely employed. There are many systems of distributing the water in irrigation to suit the special requirements of different surfaces. The work is done by the construction of great dams, fitted to hold back the waters of mountain streams and of the melting snows of winter and feed them to the land during the farming season. The Truckee-Carson project, one of the first, irrigates 100,000 acres of land in Nevada; others, still larger areas. There were in the United States in 1910, according to the census returns of that year, over 31,112,110 acres of irrigated lands included in projects either completed or under construction, and the work moves steadily on. One of the greatest feats in the problem of irrigation was the excavation, completed in 1909, of a tunnel through the Saguache Mountains from the canyon of the Gunnison River, Colorado. This tunnel, six miles in length, conveys the waters of the river to a large tract of arid land on the opposite side of the range. A later enterprise of this kind was the completion in June, 1912, of a tunnel through the Wasatch Mountains, 60 feet wide and nearly four miles long, to convey the waters of Strawberry River, Utah, to a new channel, 45 miles from the old. A reservoir has been built large enough to irrigate over 8200 acres of very fertile land in the vicinity of Salt Lake City. Irrigation is also practised in the northwest section of Canada, and promises to aid in making this one of the great grain fields of the world. Within recent years irrigation has been largely applied in the Hawaiian Islands, adding greatly to their sugar yield. Much of this water is raised by pumps from artesian wells, some of them being able to lift 20,000,000 gallons 500 feet vertically in 24 hours. Similar methods are in use in parts of the Western United States. In Australia irrigation on a great scale and according to American methods has been introduced.

Irritability (ir-i-ta-bil'i-ti), that function of a nerve or muscle in which it responds to certain stimuli, or that property in plants by which stimuli cause movements, as in the sensitive plant.

Irtish (ir'tish), a large river of Northern Asia, rises in the Altai Mountains in Chinese territory, forms Lake Zaisan, then flows N. N. W. through Asiatic Russia, and after a course of 1800 miles falls into the Obi. It receives the waters of several important rivers, and has important sturgeon fisheries.

Irvine (ér'vin), a seaport of Scotland, in Ayrshire, on the Irvine, 24 miles southwest of Glasgow. It has a good harbor, and there are chemical works (for explosives, etc.), engineering, foundry, and shipbuilding works. Pop. 9607.

Irving (ér'ving), EDWARD, the founder of the sect called Irvingites, was born in 1792, at Annan, Scotland; died at Glasgow, in December, 1834. He went in 1805 to the University of Edinburgh, and having entered the ministry of the Established Church, was appointed in 1819 assistant to the celebrated Dr. Chalmers in Glasgow. In 1822 he became minister of the Caledonian Asylum

Chapel, a Presbyterian place of worship in London. His impressive eloquence, combined with singularity of appearance, and his mannerisms, soon brought him into notice, and for a time the great as well as the fashionable flocked to hear him. In 1823 he published a work called *For the Oracles of God, Four Orations*, which sold extensively. About two years later he wrote an *Introductory Essay to Bishop Horne's Commentary on the Book of Psalms*, considered one of the best products of his pen. His theological peculiarities were well set forth in a collection of *Sermons, Lectures, and Occasional Discourses*, issued at London in 1828. These attracted much attention, and brought him shortly afterwards into conflict with the presbytery, with the result, that in 1832 he was dispossessed of his living in London, and in 1833 the presbytery of Annan, which had licensed him, deposed him from the ministry. He was charged with holding Christ guilty of original and actual sin, and denying the doctrines of atonement, satisfaction, imputation, and substitution. He was a believer in the speedy coming of Christ, and held that miraculous gifts of apostolic times had not ceased to be bestowed on the Christian Church. An excellent biography of Irving was written by Mrs. Oliphant. See *Irvingites*.

Irving, HENRY, (originally John Henry Brodribb) an English actor, born in 1838. He was for a time a clerk in London, but adopted the theatrical profession, his first appearance being at Sunderland in 1856. After playing for nearly three years in Edinburgh he appeared at the Princess' Theater, London, in 1859. After a short stay here, and a few months in Glasgow, he went to Manchester, where he remained for five or six years. Having returned to London in 1866 he took part in the *Belle's Stratagem, Hunted Down, Uncle Dick's Darling*, etc.; but his first marked success was as *Digby Grant* in Albery's *Two Roses* (in 1870), which was followed by his powerful impersonation of *Mathias* in *The Bells* (founded on Erckmann-Chatrian's *Polish Jew*). His next noteworthy parts were *Charles I, Eugene Aram*, and *Richelieu*, in the plays so named. In 1874, at the Lyceum Theater, he sustained the part of *Hamlet* so successfully as to raise himself to the first place among English actors. His chief Shakesperean parts subsequently played are *Macbeth, Othello*, and *Richard III*. In 1878 he leased the Lyceum Theater for himself, and put on the stage in excellent style *Othello, The Merchant of Venice, Much Ado About Nothing, Romeo and Juliet, Twelfth Night, Faust, Macbeth*, etc., playing in them the principal character along with Miss Ellen Terry. His appearances in the English provinces were equally successful with those in London, and he met with equal favor in his repeated visits to the United States. He was knighted in 1897. Died suddenly at Bradford, England, in 1905. He was buried in Westminster Abbey.

Irving, WASHINGTON, one of the best American writers, was born in New York in 1783; died in 1859. He was the son of a Scotsman who had emigrated to New York before the Revolution, and had become a merchant of some standing. He was educated for the legal profession, but his tastes were in the direction of literature, and already in 1802 his *Letters of Jonathan Oldstyle* appeared in the *New York Morning Chronicle*. Shortly afterwards, being threatened with pulmonary disease, he sailed for Europe, visited most continental countries, and did not return to America until March, 1806. In the same year he was called to the New York bar. His pen was now very busy, and his sketches of Dutch character, in his *Knickerbocker's History of New York*, which made its appearance in December, 1809, proved him possessed of quaint and genial humor to a high degree. About this time he joined his two brothers as a sleeping partner in a mercantile venture, and in 1815 he visited England. The failure of his brothers' business made him resolve to follow literature as a profession, and he settled in London. A series of papers which he now wrote, entitled *The Sketch-book*, first published at New York, 1818, met with such success that an enlarged edition was published in London two years later. For seventeen years, until 1832, Irving resided in Europe, principally in England, France and Spain. This was a period of great literary activity and brought forth some of his most famous works, such as *Bracebridge Hall, The Tales of a Traveler*, and *The Life of Columbus*, for which 1000, 1500 and 3000 guineas respectively were paid him by the publishers. He also acted for a time as secretary to the American Embassy in London, and the University of Oxford honored him in 1831 with the degree of B.C.L. Having returned to New York in the spring of 1832 he accompanied the expedition for the removal of the Indian tribes beyond the Mississippi, and collected the material for his *Tour on the Prairies*, published in 1835. From 1842 to 1846 he acted as United States ambassador at Madrid, and on his return in that year he retired to his country-

seat at Sunnyside. His biography of *Oliver Goldsmith*, *Mahomet and His Successors*, and the *Life of Washington* (1855-56) occupied his last years. Other works of his are: *The Conquest of Granada*, *Tales of the Alhambra*, *Legends of the Conquest of Spain*, *Voyages of the Companions of Columbus*, *Adventures of Captain Bonneville* and *Astoria*. His famous story of *Rip Van Winkle* belongs to the *Sketch-book*.

Irvingites (ér'ving-its), a name given to believers in, and followers of, Edward Irving, forming a sect properly designated as the Catholic Apostolic Church. They have a considerable number of churches in the United Kingdom, and a few unimportant congregations exist also in Germany, France, Switzerland, Canada and the United States. Their chief distinguishing feature is the belief in a revival of the spiritual gifts of the first ages of the church, such as speaking in 'unknown tongues,' and prophesying. In their constitution, which they claim to be a development of the primitive church, they adopted the fourfold ministry of 'apostles, prophets, evangelists and pastors and teachers' (Eph., iv, 11). Two years after Irving's death the number of apostles had been completed to twelve. They recognize all Christian communities, and embody in their ritual portions of those used in different sections of the church, including the Roman and Greek Catholic. The ministry is supported by tithes. The second coming of Christ is a hope of the members.

Irvington, a town of Essex County, New Jersey, 3 miles s. w. of Newark. It has smelting works and steel, rope, and tool factories, and many other industries; also a large freight depot of the Lehigh Valley railroad. Pop. 11,877.

Isaac (ī'zak; Heb. 'he will laugh'), one of the Hebrew patriarchs, the son of Abraham by Sarah, so called to denote the *laughter* and *gladness* occasioned by his birth. He is remarkable as the offspring of very old age, Sarah being ninety and Abraham a hundred years old at the time of his birth; for his miraculous escape from death as a burnt offering; and for the fraud perpetrated upon him, at his wife Rebecca's instigation, by his son Jacob, to the injury of Esau. He died at Hebron 180 years old, and was buried in the cave of Machpelah, the resting place of Sarah and Abraham, and of Rebecca.

Isaac I, Comnenus, Emperor of Constantinople, raised to the throne in 1057. He brought about great reforms in the administration of the empire, and repelled an inroad of the Hungarians, but abdicated in favor of Constantine Ducas in 1059, and retired to a convent, where he died in 1061.

Isabella of Castile (iz-a-bel'a), daughter of King John II of Castile and Leon, consort of Ferdinand the Catholic, was born 1451, married 1469, and died 1504. She was a woman of great charms, courage, and sagacity, and contributed no small share to the many remarkable events of the reign of Ferdinand V, including the introduction of the Inquisition, 1480; the discovery of America by Columbus, 1492, to which she lent material and moral aid; and the conquest of Granada, and the expulsion of the Moors.

Isabella II, ex-queen of Spain, daughter of Ferdinand III, was born in 1830, and succeeded her father three years after, her mother being appointed queen-regent. The early years of her reign were disturbed by a rising in favor of her uncle, Don Carlos, who, if the Salic law had not been set aside, would have ascended the throne instead of her, but this was finally quelled in 1839. She was declared of age in 1843, and in 1846 was married to her cousin, Don Francisco d'Assisi. Her reign was so despotic and her life so licentious that a revolution took place in 1868, which drove her from the country. She resigned her claims to the crown in favor of her son Alfonso, who ascended the throne in 1875. She died in 1904.

Isæus (ī-sē'us), an Athenian orator, who lived between 420 and 348 B.C. He was a pupil of Lysias and Isocrates, and, like them, became a teacher of eloquence and writer of orations, chiefly judicial. Eleven of his orations are extant. His style is clear, forcible, and concise.

Isaiah (ī-zā'yā; Heb. *Yeshayahu*, 'Salvation of Jehovah'), the first of the great Hebrew prophets. He began his predictions in the last years of Uzziah's reign. Of his father, Amoz, we know nothing, and of the circumstances of his life but little. We know, however, that he had great influence over the kings and people of Judah, and he is supposed to have died at a good old age at Jerusalem, at the beginning of Manasseh's reign. The first portion of the writings that pass under his name consists chiefly of declarations of sin and threatenings of judgments, while the last 27 chapters, together with some previous ones, hold out promises of a glorious future for Israel. The style throughout is clear and simple, yet dignified and sublime in the highest degree. His author-

ship of the last 27 chapters is denied by some eminent critics, who unite in ascribing them to a later prophet, perhaps also called Isaiah, while others believe that the name Isaiah stands for a school of prophets; but the integrity of the book has still many able defenders.

Isar (ē'zär), a European river which rises in Tyrol, about 6 miles N. E. of Innsbruck, enters Bavaria, flows past Munich, and latterly joins the Danube; course above 190 miles.

Isatis (ī'sa-tis), the genus of plants to which woad belongs.

Isauria (ī-sa'ri-a), in ancient geography, a country in Asia Minor, bordering on Lycaonia, Phrygia, Pisidia, Cilicia, and Pamphylia. Its capital, Isaura, was destroyed by the Romans.

Ischia (is'ki-ä), an island of Italy, 26 square miles in extent, in the Gulf of Naples, with beautiful scenery and a fertile soil, producing excellent wine and fruits. It is entirely volcanic in character, and is noted for its warm mineral springs and volcanic convulsions. In 1881 and 1883 earthquakes caused great loss of life and property. Several shocks have been experienced since, but without disastrous results. The capital, Ischia, with some 7,000 inhabitants, is a favorite resort of tourists in Italy. Other towns are Casamicciola and Forio, both of which suffered severely in 1883. Pop. 26,891.

Ischium (is'ki-um), the inferior posterior part of the pelvic arch in vertebrates; a part of the hipbone.

Ischl (ē'shl), a fashionable watering place in Upper Austria, on the Traun, 50 miles S. W. of Linz, celebrated for its salt baths. The Austrian emperor has a residence in the neighborhood. Pop. of commune, 9646.

Iseo (ē-sā'ō), or SABINO, a picturesque lake in Upper Italy, between Brescia and Bergamo, and formed by the waters of the Oglio; length 15 miles; average breadth 6 miles.

Isère (ē-sär), a river which rises in Italy, crosses Savoy, enters France by the department of Isère, to which it gives its name, and joins the Rhone 5 miles above Valence; length about 190 miles, of which nearly 90 are navigable.

Isère, a department of Southeastern France; area 3185 square miles. It is generally mountainous, the highest summit being Le Grand Pelvoux, 13,158 feet. The whole department belongs to the basin of the Rhone, which drains a great part of it directly, the only other important river being the Isère. The soil is generally fertile, and produces abundant cereal and leguminous crops; the vine and mulberry being also cultivated. Lead, copper, and iron are found in considerable quantities; also coal, marble, slate, granite, and porphyry, and the iron mines employ a number of blast furnaces. There are numerous paper, silk, and cotton mills. Grenoble is the capital. Pop. 562,315.

Iserlohn (ē'zer-lōn), a town of Prussia, province of Westphalia, with manufactures in brass, bronze, tin, and iron, cutlery, zinc and iron furnaces, etc. Pop. (1910) 31,214.

Isernia (ē-zer'nē-ä; Latin, *Æsernia*), an episcopal city of South Italy, on a spur of the Apennines, province Campobasso. Pop. 9322.

Ishim (ish-em'), a river of Western Siberia, a tributary of the Irtish.

Ishmael (ish'mā-el; Hebrew, *Yishmael*, 'Whom God hears'), the son of Abraham by Hagar. He married an Egyptian wife, and had twelve sons and one daughter, who became the wife of Esau. He died when 137 years old. It was predicted that he was to become 'a great nation,' and the Arabs, especially the Bedouins, are often regarded as descendants of Ishmael.

Ishmaelites (ish'mäl-its), ISHMEELITES, the descendants of Ishmael. See *Ishmael*.

Ishmaelites, ISMAELITES, or ISMAILIANS, a Mohammedan sect originating in the first century of the Hegira, and deriving its name from Ishmael or Ismael, one of Ali's descendants. From the eighth to the twelfth century they were powerful in the East, and distributed themselves over Irak, Syria, Persia, and Egypt.

Ishpeming (ish'pē-ming), a city of Marquette county, Michigan, 15 miles N. W. of Marquette. There are extensive iron mines, with very rich ore, large quantities of which are shipped. There are machine shops, powder works, etc. Pop. 12,448.

Isidore (is'i-dōr), the name of three Spanish ecclesiastics, of whom the most famous was Isidore of Seville, who flourished at the beginning of the seventh century. He was the most profound scholar, the most eloquent orator, and the ablest prelate of his age and country, and consequently exercised a powerful influence over the development of Latin Christianity. He was made bishop of Seville in 600 or 601, presided over the Councils of Seville, 619, and Toledo, 633; and died at Seville in 636. Several of his works, which embrace

divinity, history, philosophy, etc., were translated into English as early as the middle of the sixteenth century.

Isidorian Decretals, a spurious collection of decretals belonging to the ninth century, which were for a long period regarded as authentic. See *Decretals*.

Isinglass (ī'zing-glas), a gelatinous substance, of which the best kind is prepared from the swimming bladder or sound of the sturgeon, dried and cut into fine shreds, while the American article is obtained from the same part in the cod, hake, etc. It is the basis of the Russian glue, which is preferred to all other kinds for strength. A test solution is also prepared from it, by means of which tannic acid may be distinguished and separated from gallic acid, the former giving it a yellowish-white precipitate. Isinglass boiled in milk forms a nutritious jelly, and a solution in water, with a very small proportion of some balsam, spread on black silk, is the court plaster of the shops. It is also used in fining sherries and other white wines, and in making mock pearls, stiffening linens, silks, gauzes, etc. With brandy it forms a cement for porcelain and glass.

Isis (ī'sis), the principal goddess of the Egyptians, the sister and wife of Osiris, representing the moon, as Osiris did the sun. The Egyptians believed that Isis first taught them agriculture, and as the Greeks offered the first ears gathered to Ceres, so did the Egyptians to Isis. She is represented under various forms. In one representation she has the form of a woman, with the horns of a cow, as the cow was sacred to her. She is also known by the attributes of the *lotus* on her head, and the *sistrum* in her hand, a musical instrument which the Egyptians used in the worship of the gods. She is often accompanied by her infant son, Horus. In one celebrated Egyptian statue she was shown with her face veiled. She was particularly worshiped in Memphis, and at a later period throughout all Egypt. From Egypt her worship passed over to Greece and Rome, and the abuses which it occasioned at Rome caused its frequent prohibition there. It was, however, repeatedly revived. The Romans never considered the worship, which was introduced among them by Sulla (B.C. 86), altogether reputable, and its attendant immorality was vigorously lashed in the satire of Juvenal.

Isis.

Isis, a kind of coral, popularly known as *Mare's-tail* coral, from its likeness to the plant of that name (*Hippuris*). It is found chiefly in the Indian Seas, in the Pacific Ocean, and on the coasts of America.

Isis, the upper part of the river Thames, before its junction with the Thame.

Iskanderoon (is-kăn-di-rōn'), or Iskenderoon. See *Alexandretta*.

Isla (ēs'lä), José Francisco de, born at Segovia in 1714; died at Bologna in 1783; a Spanish satirist after the model of Cervantes. His fame rests principally upon his *History of Fray Gerundio*, a satire on the monks of his time, a book which fell under the ban of the Inquisition. He translated *Gil Blas* into Spanish.

Isla de Pinos ('Isle of Pines'), an island lying south of the western portion of Cuba, to which it belongs, 40 miles by 34, with good pastures and valuable timber. The American residents sought to have it annexed by the United States, but this was officially repudiated in 1905.

Islam (is-lăm'), that is, complete resignation and submission to the will of God, is the name given in Arabic to the religion originated by Mohammed. The fundamental doctrine of Islamism, and the only one it is necessary to profess to be a Moslem, is expressed in the common formula of faith: 'There is no God but Allah, and Mohammed is his prophet,' to which the Shiahs or Shiites, that is, the majority of Persian and Indian Moslems, add 'and Ali is the vicar of God.' See *Mohammedanism*.

Island (ī'land), a portion of land entirely surrounded by water, and smaller in size than the great masses of land known as continents. Islands are of all sizes, from mere dots of land or rock in the sea to a great mass like Australia, which is often spoken of as a continent. Islands are divided into two distinct classes: *continental* islands, lying in proximity to continents, and *pelagic* or *oceanic*, from their position in the oceans. Continental islands occur along the margin of the continents, and are generally of the same geological structure. Pelagic islands are mostly of volcanic or coral formation. A cluster of islands, such as

the West Indies, the Canaries, the Hebrides, etc., are called an *archipelago*.

Islands of the Blessed, according to the Grecian mythology, islands which were supposed to lie westward in the ocean, where the favorites of Zeus, snatched from death, lived in perpetual happiness.

Isle of France. (fŏns). See *Mauritius*.

Isle of Man. See *Man*.

Islay (ī'lā), an island of Scotland, one of the Inner Hebrides, forming part of Argyllshire, and separated by the Sound of Islay from the island of Jura. Area, 246 square miles. Pop. 6387.

Isle of Pines, in the W. Indies, is about 30 miles S. of Cuba, of which it forms a dependency; area about 1200 square miles. The ownership of the island was left unsettled by the treaty of 1903; but in April, 1907, the Supreme Court decided that it was not American territory. Pop. about 3200.

Isle of Wight. See *Wight*.

Islip, a town of Suffolk Co., N. Y., 40 miles E. of New York city, contains a village of the same name, on Great Suffolk Bay. It has a large trade in fish and oysters, and is a well-known summer resort. Pop. (1910) 18,346.

Ismail, a town and river-port in the Russian government of Bessarabia, stands on the north bank of the Kilia branch of the Danube, 48 miles from the mouth of that river. It was formerly a Turkish fortress. Pop. 34,000.

Ismailis, a Mohammedan sect. Like the rest of the Shiah, or party of Ali, they held that the dignity of Imam, or head of the true faith, was inherent in the house of the Prophet and the line of Ali. They arose in Syria and Persia, taking their name from one Ismail (about 770 A. D.), whom they regarded as the seventh and last of the Imams.

Isleworth, a Middlesex parish, on the left bank of the Thames, 12 miles W. S. W. of London, England; noted for its market gardens and nurseries. Pop., including Heston, 43,316.

Islington, once a suburb of London, England, but now forming one of the metropolitan boroughs, is situated 2 miles N. of St. Paul's. The Agricultural Hall (1861), where the great national cattle and horse shows are held, accommodates 50,000 people. Pop. (1911) 327,423.

Ismailia (is-mā-ē'lē-ä), a trading post in E. Sudan on the Upper Nile. Pop. (1907) 10,373.

Ismid (is-mēd'), Ismir, a town of Asia Minor, on the Sea of Marmora, seat of a Greek metropolitan and an Armenian archbishop. It represents the ancient Nicomedia. Pop. 20,000.

Isnik. See *Nicæa*.

Isobaric Lines (ī-sō-bär'ik), lines drawn on a map or globe through all places where the barometer is at the same height at a certain time. Telegraphic communication enables these lines to be drawn with some accuracy.

Isocheimal Lines. See *Isothermal Lines*.

Isochronism (ī-sok'run-izm; Gr. *isos*, equal; *chronos*, time), the property by which a pendulum, or a balance wheel, or an oscillating particle (as of air) conveying sound vibrates through longer or shorter arcs in the same time (or nearly so). Given a certain length of spring, all the vibrations, large or small, are isochronous. If the spring is shortened the large vibrations take place quicker than the short ones: if, on the contrary, the spring is lengthened, the small arcs are performed quicker than the large ones. For small oscillations a pendulum is almost exactly isochronous, but it is only with the cycloidal pendulum that perfect isochronism is obtained.

Isoclinic Lines (ī-sō-klī'nik). See *Isoconic Lines*.

Isocrates (ī-sok'rä-tēz), an ancient Greek orator, born at Athens 436 B. C. He spoke seldom in public; but he prepared orations for others, and trained many able orators, among his pupils being Isæus, Hyperides, Lycurgus, etc. His patriotism was sincere, and his desire for the freedom of Greece so intense that he starved himself to death in his ninety-eighth year from grief at the unhappy battle of Cheronæa. He was master of a graceful literary prose style, but was accused of being too florid and of carrying elaboration too far, his periods being formed with endless labor. Twenty-one of his orations are still extant.

Isogonic Lines (ī-sō-gon'ik), lines drawn on a map through all places where the declination of the magnetic needle is the same. *Isoclinic lines* are drawn through places where the inclination or dip of a magnetic needle is the same; the zero isoclinic line (drawn through places where there is no dip) is called the magnetic equator.

Isola Bella (ē'sō-lä), one of the Borromean Islands in Lake Maggiore. See *Borromean Islands*.

Isŏla Grossa, a long, narrow island in the Adriatic, on the coast of Dalmatia.

Isŏla Madre, one of the Borromean Islands (which see).

Isomerism (ī-som'ĕr-ĭsm; Gr. *isos*, equal; *meros*, a part), literally equality of parts, a chemical term first applied by Berzelius in the case of bodies which, although identical in composition, that is, as regards number and nature of atoms, have nevertheless different chemical properties. It is supposed to be due to different grouping of the atoms of each molecule, or to the varying amount of energy employed in its formation.

Isomorphism (ī-sō-morf'ĭsm; Gr. *isos*, equal, *morphē*, form; that is, 'equality in form'), is the phenomenon observed where chemical bodies composed of different elements, but equal in atomic quantity and combination, affect the same crystalline form. It was formerly supposed that every substance had its own peculiar crystalline form. Mitscherlich, however, showed that certain elements or groups of elements may replace one another in salts without altering the crystalline form of the compound.

Isonandra (ĭs-o-nan'dra), a genus of plants, order Sapotaceæ, one species of which, *I. gutta*, is known as the gutta-percha tree.

Isoperimetrical (ī-sō-per-ĭ-met'rĭ-kal), in geometry, a term applied to figures which have equal circumferences or perimeters.

Isopoda (ī-sop'o-da; Greek, *isos*, equal; *pous*, *podos*, foot), an order of crustaceans having sessile eyes and a depressed body; the thoracic and abdominal rings free, except the first thoracic, which is united with the head. The feet are of equal size and move in the same direction. The Isopoda vary widely in habits; some, like the wood-lice, are terrestrial, and inhabit damp situations, such as under stones, and moss, and under the bark of trees; others live as parasites on fishes, and in the gill chambers or on the outer surface of shrimps, crayfish, and other higher crustaceans; and while some forms are exclusively marine, others inhabit fresh water.

Isothermal Lines (ī-sō-ther'mal), lines drawn on a map or globe through places which have the same mean annual temperature. (See *Climate*.) *Isotheral* lines are drawn through places having the same mean temperature during the hottest month of the year. *Isocheimenal* or *Isocheimal* lines are drawn through places having the same mean temperature during the coldest month in the year.

Isotonic Sea-water (ī-sō-ton'ĭk), a solution of sea-water having salts dissolved in such proportion as to occasion no change of volume in red blood corpuscles brought into contact with the solution. The idea of the use of injections of isotonic sea-water in the treatment of disease first occurred about 1892 to René Quinton, then professor of biology in the University of France. Many interesting experiments were conducted by Quinton and others. It was shown that a dog which had been bled almost to death could be revived by the injection of a similar amount of sea-water. In a few days the dog was as well as ever and its blood, when analyzed, was found to contain a greater proportion of hæmoglobin than before. The first public dispensary was opened by Quinton in Paris in 1907, with highly satisfactory results. The diseases that have yielded to isotonic sea-water treatment are eczema, acne, gastric and intestinal diseases, constipation, typhoid fever, auto-intoxication, incipient tuberculosis, lupus, chronic nephritis, neurasthenia, etc. It is used by some surgeons before and after severe surgical operations with highly satisfactory results.

Ispahan (ĭs-pä-hän') or ISPAHAN, a very ancient city of Persia, and for centuries its capital, in the province of Irak-Ajemi, on the river Zendarud, 210 miles south of Teheran, the present Persian capital. It was once one of the most magnificent cities in the East, but little is now left of its former splendor. The manufactures are still extensive, however, and Ispahan is the emporium of the inland commerce of Persia. Pop. 80,000, not more than one tenth of former.

Israel, and ISRAELITES. See *Jews*.

Israels (ĭs-rä-äls'), JOSEF, Dutch painter, born a Gröningen, 1824, of Jewish parentage. He attracted attention in the Paris Salon of 1857 and soon gained world fame by his works, which reveal a mastery of technique and color as well as intense national spirit and deep human emotion.

Issik-kul, Issyk-kul (ĭs-sĭk-kōl'), a lake of Central Asia, in the Russian province of Semirechensk, south of Lake Balkhash, about 110 miles long by 36 broad, with brackish water abounding in fish. It receives many streams, but is gradually decreasing in size.

Issoire (ĭs-wär), a French town, department of Puy-de-Dôme, 19 miles S. S. E. from the departmental capi-

tal, Clermont. Manufactures articles in copper, and has numerous oil-mills. Pop. (1906) 5274.

Issoudun (is-ō-dŭn), a French town, department of Indre, 17 miles N. E. of the departmental capital, Châteauroux. It has manufactures of steam engines, agricultural implements, woolens, cottons, etc. Pop. (1906) 10,566.

Issue (ish'ū), in law, the point or matter depending in a suit on which two parties join and put their cause to trial. It is a single, definite, and material point issuing out of the allegations of the parties, and consisting regularly of an affirmative and negative. It is either an *issue in law* to be determined by the court, or *in fact* to be ascertained by a jury.

Issus (is'sus), anciently a town of Cilicia, in Asia Minor, on the Gulf of Issus. Here Alexander of Macedon gained a complete victory over Darius (B.C. 333).

Issy (ē-sē), a suburban quarter in the southwest of Paris, with a strong fort.

Istambol. See *Constantinople.*

Istar (is'tar), the ancient Babylonian god of war and destruction.

Isthmian Games (ist'mi-an), public games of ancient Greece, so called because they were celebrated on the Isthmus of Corinth, and having a similar character to the Olympian, Nemean, and Pythian games. The Greeks in general took part in them, and the principal exercises were boxing, wrestling, foot, horse, and chariot races, and throwing the discus. They were celebrated in April and May, in the first and third year of each Olympiad, and the victors were rewarded with wreaths of pine leaves. The origin of these games is lost in antiquity, but they were generally regarded as originated in honor of Poseidōn (Neptune). See *Games.*

Isthmus (ist'mus, is'mus), in geography, a neck of land by which two continents are connected, or a peninsula is united to the mainland. Such are the *Isthmus* of Panama, connecting North and South America, and the *Isthmus* of Corinth, connecting the Morea with Northern Greece.

Istria (is'tri-a), a peninsula of triangular form, projecting into the northeast corner of the Adriatic Sea, part of the Austro-Hungarian Dominions. The surface is mountainous, particularly in the north. The soil is generally thin and gravelly, but the forests, which are extensive, yield excellent timber, and the vine, olive, and mulberry are successfully cultivated. Area, 1900 square mile Pop. 344,173.

Italy (it'a-li), a kingdom in Souther Europe, consisting in the main a large peninsula, having a singular r semblance to a boot in shape, stretchin southwards into the Mediterranean, bu also including a considerable portion the mainland and the islands of Sicily Sardinia, Elba, Ischia, Lipari Islands etc. It is bounded on the north an northwest by the Alps, which separat it from Austria, Switzerland, and France and on the northeast by Austria; else where it is washed by the Mediterranean or the Adriatic, an arm of the latter The area is about 110,000 square miles For administrative purposes it is divided into sixty-nine provinces, which are grouped under sixteen departments (*compartimenti territoriali*), some of them consisting of only a single province. The following table furnishes a list of the departments, with their area and population:—

Departments.	Area in sq. m.	Population (1911).
Piemonte (Piedmont)	11,336	3,424,538
Liguria	2,037	1,196,853
Sardinia (Island)	9,306	852,934
Lombardia (Lombardy)	9,297	4,786,907
Venetia	9,475	3,526,625
Emilia	7,990	2,667,510
Marca (The Marches)	3,749	1,088,875
Umbria	3,748	685,042
Toscana (Tuscany)	9,304	2,694,453
Roma (Rome)	4,663	1,298,142
Aruzzi e Molise	6,380	1,427,642
Campania	6,290	3,347,925
Calabria	5,819	1,404,076
Sicilia (Sicily)	9,935	3,683,380
Apulia	7,376	2,128,632
Basilicata	3,845	473,119
Kingdom of Italy	110,550	34,686,653

From 1861, when the Kingdom of Italy was constituted, until 1865, Turin was the capital, Florence was then selected, and in 1871 Rome. The largest town is Naples; next in order are Milan, Rome, Turin, Palermo, Genoa, Florence, and Venice. The foreign possessions include Eritrea, the Dhalak Islands on the Red Sea coast of Africa, Somaliland on the Gulf of Aden, and Tripoli, which was taken from Turkey in 1911.

Physical Features.—Among the principal physical features of Italy are the Alps, on its northern frontiers, and the chain of the Apennines, which run down the middle of the peninsula through its whole length to the Straits of Messina, while numerous branches are thrown off laterally, and form an endless succession of wooded hills, olive-clad slopes, and fertile valleys. In the north, enclosed

between the ranges of the Alps and Apennines, is a vast and fertile plain, intersected by the Po and its tributaries. Two active volcanoes belong to the kingdom, Vesuvius in South Italy and Etna in Sicily. The eastern shore of Italy is generally flat and uninteresting, presenting particularly along its northern part a series of sandy islands and lagoons, which dam up the mouths of the rivers and occasion the formation of pestilential marshes. On the west coast the same thing is occasionally seen, as in the case of the Pontine Marshes and the Tuscan Maremma; but as a rule the west coast is more elevated, and often presents delightful scenery, as round the Gulf of Genoa and the Bay of Naples. The only river of any magnitude is the Po, which has a length of about 450 miles before it enters the Adriatic. It is fed by streams both from the Alps and the Apennines, the Ticino, Adda, Oglio, etc., from the former, the Trebbia, Secchia, etc., from the latter. The Adige (in Germany, the Etsch) has its mouth at no great distance from the Po, and is partly fed in the same way. In the peninsular part of Italy are the Arno, Tiber, Garigliano, Volturno, etc. There are a number of lakes, of which the most important are Lakes Maggiore, Lugano, Como, and Garda in the Alpine region; Lakes Trasimene, Bolsena, and Albano in the Apennine region. Italy is rich in useful minerals, but the scarcity of coal prevents the full development of mining industry. Sulphur, salt, iron, and marble are the chief, though small quantities of lead, copper, zinc, silver, and borax are also obtained.

Climate.—In the south of Italy the climate resembles that of Africa, being dry and burning and subject to the sirocco. In the northern regions, the neighborhood of the Alps, and the abundance of water-courses, serve to maintain a pleasant temperature. Yet this region is at times extremely cold, especially in the interior of the great plains. In general the climate of Italy is healthy, except marshy districts such as the rice plantations of Lombardy, the Tuscan Maremma, the Campagna of Rome, and the Pontine Marshes, responsible for the spread of malarial fevers. The Riviera or coast of the Gulf of Genoa is a favorite winter resort from more northern regions.

Vegetable Products, Agriculture.—The natural productions of the soil of Italy are as various as its climate. In the Alpine regions all plants belonging to temperate climates flourish, while the southern regions possess almost a tropical flora. Agriculture forms the chief support of the population, and the land, where not mountainous, is generally productive, although the system of culture adopted is in most parts defective, and large areas remain untilled. The best cultivation, aided by an excellent system of irrigation, is found in Lombardy, Venetia, Piedmont, Tuscany, and the parts of Emilia adjoining the Po. Most kinds of cereals, including rice and maize, are cultivated, and the wheat in particular is of fine quality, but is not sufficient for the home consumption. Hemp, madder, flax, tobacco, hops, saffron, and, in the extreme south, cotton and sugar-cane are cultivated. Fruits are the object of attention everywhere; and in the cultivation of the olive in particular Italy surpasses all other European states. The fruits include oranges and lemons in the warm regions of the south, besides figs, peaches, apricots, almonds, etc. There is a very large production of wine, but only a few of the wines have any reputation in other countries. The rearing of live-stock is an important industry. The cheese of Italy is famous, especially the Gorgonzola and the Parmesan.

Manufactures.—Since the consolidation of the Italian kingdom, the manufactures of the country have made considerable advances. The most important of these are the silk manufactures, Italy as regards the production of raw silk being in advance of all the other countries of Europe. Lombardy, Piedmont, and Venetia are the great centers for its preparation. Nearly 3,000,000 spindles are employed in spinning. The weaving is less developed. The cotton manufactures are also centered in Upper Italy, chiefly in Lombardy, and have much increased of late. Woolen manufactures are also chiefly carried on in Upper Italy. In the iron industry the department of Lombardy stands at the head; more particularly the provinces of Brescia, Como, and Milan. Tanning, the manufacture of linen, of paper, gold and silver wares, articles in bronze, musical instruments, the making of gloves, boots and shoes, felt and silk hats, are also considerable industries. The manufacture of tobacco is a state monopoly. Of special repute are the cameos and mosaics of Rome, Naples, and Florence; the filigree and coral work of Genoa; the plaited straw and the earthenware manufactures of Italy generally.

Trade.—The foreign trade is mainly with France and Algeria, Great Britain, Austria, and Germany. The chief imports are wheat, raw cotton, and cotton manufactures, coal, iron and machinery,

wool, sugar, coffee; the chief exports, raw silk, olive oil, wine, fruits, eggs, coral, hemp, marble, rice, sulphur. The principal ports are Genoa, Leghorn, Messina, Naples, Palermo, Venice, Brindisi and Catania. The total length of railways opened for traffic in 1910 was about 11,000 miles; of telegraph lines, 40,000 miles, nearly two-thirds of the whole belonging to the government.

Constitution and Government.—The constitution of the Kingdom of Italy is a limited monarchy, based upon the Fundamental Statute granted by King Charles Albert to his Sardinian subjects March 4, 1848. The king, who is hereditary, exercises the power of legislation only in conjunction with a national parliament, consisting of two chambers. The first chamber is called the senate, and is composed of the princes of the blood, and an indefinite number of members appointed for life by the king. The second chamber is called the chamber of deputies, and consists of 508 members, who are elected by a majority of all the citizens above twenty-one years of age who are in the enjoyment of civil and political rights. Each province has the right of independent administration, and the executive power is intrusted to a provincial council. In each province the power of the state is represented by a prefect, who is supported by a council. The executive power of the state is exercised by the king through responsible ministers. In 1911 the budget estimates were, total revenue, $490,670,190; expenditure, $480,706,677; public debt, $2,645,000,000.

Army and Navy.—All men capable of bearing arms are under obligation of military service from their twenty-first to the end of their thirty-ninth year. Of the young men of the age of twenty-one, 80,000 are levied annually for the standing army, while the rest are entered in the army of reserve. In 1910 the strength of the standing army on the war footing was in all 1,043,000; the number unorganized but available for duty was estimated at 1,200,000, making the total for the whole military service 2,243,000. The navy was made up of 13 battleships and 22 cruisers, with a large number of torpedo boats and destroyers.

Religion and Education.—The Roman Catholic is the state religion, but all other creeds are tolerated, and adherents of all religions have equal municipal and political rights. The pope has his seat at Rome, and his palaces of the Vatican and the Lateran, and his villa of Castel Gandolfo, are not under the jurisdiction of the state. In 1861 the law annihilating ecclesiastical jurisdiction and the privileges of the clergy was extended to the whole of the kingdom, and in 1866 a bill was passed for the suppression (with certain exceptions) of religious houses throughout the kingdom. Elementary education is nominally compulsory, and is entirely supported from the municipal rates; but the number who can neither read nor write still remains very large. For secondary instruction there are a large number of gymnasia and technical schools, and for the higher education there are no less than twenty-one universities, many of them of ancient foundation, and at one time of considerable renown. The oldest are those of Bologna (founded in 1119), Padua (1228), Naples (1224), Rome (1244), Perugia (1320), Pisa (1329), Siena (1349), Pavia (1390), Turin (1412), and Parma (1422).

Money, Weights, and Measures.—The present monetary system of Italy is the same as that of France, the lira being equal to the franc, and divided into 100 centesimi, as the franc is into 100 centimes. The lira is accordingly equal to about 19 cents. The weights and measures of Italy have also been adopted from France, with only such modifications in their names as are necessary to give them an Italian form.

History.—The ancient history of Italy will be found under *Rome*. The modern history begins with 476 A.D., when Odoacer, chief of the Herulians, a German tribe which had invaded the country, was proclaimed king of Italy. After a reign of twelve years he and his followers were overpowered by the Ostrogoths under Theodoric the Great. The Ostrogoths were in turn subdued by Byzantine troops, and Italy came under the dominion of the Eastern emperors, who ruled through an exarch residing at Ravenna. In 568 the Lombards (Langobardi), a German people originally from the Elbe, led by their king, Alboin, conquered the Po basin, and founded a kingdom which had its capital at Pavia. The kingdom of the Lombards included Upper Italy, Tuscany, and Umbria, with some outlying districts. But on the northeast coast the inhabitants of the lagoons still retained their independence, and in 697 elected their first doge, and founded the republic of Venice. (See *Venice.*) Ravenna, the seat of the exarch, with Romagna, Rimini, Ancona, and other maritime cities on the Adriatic, and almost all the coasts of Lower Italy, remained unconquered, together with Sicily and Rome. The slight dependence of this part of Italy on the court of Byzantium disap-

peared almost entirely in the beginning of the eighth century. The power of the pope, though at first recognized only as a kind of paternal authority of the bishop, grew steadily in these troubled times, especially in the struggle against the Lombard kings. In consideration of the aid expected against King Astolphus, Pope Stephen III (754) not only anointed the king of the Franks, Pepin, but appointed him patrician or governor of Rome. In return Pepin presented the exarchate of Ravenna, with the five maritime cities, to the pope, thus laying the foundation of the temporal power of the holy see. At the invitation of Pope Hadrian I, Charlemagne made war upon Desiderius, the king of the Lombards, took him prisoner in his capital, Pavia (774), and united his empire with the Frankish monarchy. Italy, with the exception of the duchy of Benevento and the republics of Lower Italy, thus became a constituent part of the Frankish monarchy, and the imperial crown of the West was bestowed on Charlemagne (800). On the breaking up of the Carlovingian empire Italy became a separate kingdom, and the scene of strife between Teutonic invaders. At length Otto the Great was crowned emperor at Rome (961), and the year after became emperor of what was henceforth known as the Holy Roman Empire.

During the following centuries the towns and districts of North and Middle Italy gradually made themselves independent of the empire, and either formed themselves into separate republics or fell under the power of princes bearing various titles. A large part of Middle Italy at the same time was under the dominion of the popes, including the territory granted by Pepin, which was afterwards enlarged on several occasions. In Southern Italy there were in the time of Charlemagne several independent states. In the ninth century this part of the peninsula, as well as Sicily, was overrun by Saracens, and in the eleventh century by Normans, who ultimately founded a kingdom which embraced both Lower Italy and Sicily, and which, though it more than once changed masters, continued to exist as an undivided kingdom till 1282. In that year Sicily freed herself from the oppression of the then rulers, the French, by the aid of Pedro of Aragon (see *Sicilian Vespers*), and remained separate till 1435. It was again separate from 1458 to 1504, when both divisions were united with the crown of Spain. With Spain the kingdom remained till 1713, when Naples and Sicily were divided by the Treaty of Utrecht, the former being given to Austria, the latter to the Duke of Savoy. In 1720 they were again united under Austria, but in 1734 were conquered from Austria and passed under the dominion of a separate dynasty belonging to the Spanish house of Bourbon. See *Sicilies, Kingdom of the Two.*

The history of mediæval Italy is much taken up with the party quarrels of the Guelfs and Ghibellines, and the quarrels and rivalries of the free republics of Middle and Upper Italy. In Tuscany the party of the Guelfs formed themselves into a league for the maintenance of the national freedom under the leadership of Florence: only Pisa and Arezzo remained attached to the Ghibelline cause. In Lombardy it was different, Milan, Novara, Lodi, Vercelli, Asti and Cremona formed a Guelf confederacy, while the Ghibelline league comprised Verona, Mantua, Treviso, Parma, Placenza, Reggio, Modena and Brescia. Commercial rivalry impelled the maritime republics to mutual wars. At Meloria the Genoese annihilated (1284) the navy of the Pisans, and completed their dominion of the sea by a victory over the Venetians at Curzola (1298). See *Pope, Genoa, Florence*, etc.

Up till the time of the Napoleonic wars Italy remained subject to foreign domination, or split up into separate republics and principalities. The different states were bandied to and fro by the chances and intrigues of war and diplomacy between Austria, Spain and the House of Savoy. During the career of Napoleon numerous changes took place in the map of Italy, and according to an act of the Congress of Vienna, in 1815, the country was parceled out among the following states:—(1) The Kingdom of Sardinia, consisting of the island of Sardinia, Savoy, and Piedmont, to which the Genoese territory was now added. (2) Austria, which received the provinces of Lombardy and Venetia, these having already been acquired by her either before or during the time of Napoleon. (3) The Duchy of Modena. (4) The Duchy of Parma. (5) The Grandduchy of Tuscany. (6) The Duchy of Lucca. (7) The States of the Church. (8) The Kingdom of the Two Sicilies. (9) The Republic of San Marino. (10) The Principality of Monaco. The desire for union and independence had long existed in the hearts of the Italian people, and the governments at Naples, Rome, Lombardy, and other centers of tyranny were in continual conflict with secret political societies. The leading spirit in these agitations in the second quarter of the nineteenth century was Giuseppe Mazzini,

who in the end contributed much to the liberation of his country. The French Revolution of 1848 brought a crisis. The population of Lombardy, Venetia, Parma, and Modena took up arms and drove the Austrian troops in retreat to Verona. Charles Albert, King of Sardinia, then declared war against Austria, and was at first successful, but his forces were severely defeated at Novara (March, 1849), when Charles Albert abdicated in favor of his son, Victor Emmanuel. Meanwhile the pope had been driven from Rome, and a Roman republic had been established under Mazzini and Garibaldi, the leader of the volunteer bands of Italian patriots. Rome was, however, captured by the French, who came to the aid of the pope (July, 1849), who resumed his power in April, 1850, under the protection of the French, and the old absolutism was restored. Similar attempts at revolution in Sicily and Naples were also crushed, but the secret societies of the patriots continued their operations. In 1859, after the war of the French and Sardinians against Austria, the latter power was compelled to cede Lombardy to Sardinia, and in the same year Romagna, Modena, Parma, and Piacenza were annexed to that kingdom, which was, however, obliged to cede the provinces of Savoy and Nice to France. In the south the Sicilians revolted, and supported by a thousand volunteers, with whom Garibaldi sailed from Genoa to their aid, overthrew the Bourbon government in Sicily. Garibaldi was proclaimed dictator in the name of Victor Emmanuel. In August Garibaldi crossed to Naples, defeated the royal army there, drove Francis II to Gaeta, and entered the capital on September 7th. Sardinia intervened and completed the revolution, when Garibaldi, handing over his conquests to the royal troops, retired to Caprera. A plebiscite confirmed the union with Piedmont, and Victor Emmanuel was proclaimed King of Italy, thus suddenly united almost, in Mazzini's phrase, 'from the Alps to the sea.' Only the province of Venice and the Roman territory still remained outside. The former was won by Italy's alliance with Prussia in 1866 against Austria. The temporal power of the pope was still secured by French troops at Rome, till the French garrison was withdrawn at the outbreak of the Franco-German war in 1870, when Italian troops took possession of the city in the name of King Victor Emmanuel. On June 30, 1871, the seat of government was formally removed from Florence to Rome. In 1878 Victor Emmanuel died, and was succeeded by his son, Humbert I, under wh the general history of the country as uneventful. Bank scandals drove the Giolitti ministry from office in 1893, and Signor Crispi was invited by King Humbert to form a new cabinet. In 1896, attempting to establish a protectorate over Abyssinia, the Italians were defeated with great loss, and Crispi was succeeded by Marquis di Rudini. Humbert was assassinated July 29, 1900, and was succeeded by his son as Victor Emmanuel III. Until the advent of the Young Turks to power in Turkey, the foreign policy of Italy meant Austria only; but on September 20, 1911, Italy declared war against Turkey, claiming that Italian enterprise in Tripoli had been systematically crushed. This war led the Italian troops far into the desert region of that section of North Africa, and indeed, after a year's contest, in victory for the Italian troops. In the treaty of peace, signed October 15, 1912, the extensive region of Tripoli and Cyrenaica was ceded to Italy, giving that country a hold in northern Africa which it had long coveted.

When Europe, during the early years of the 20th century, became divided into two great political alliances, that of Great Britain, France and Russia, and that of Germany and Austria-Hungary, Italy joined the latter, pledging itself to aid its allies if forced into a war of defense. In August, 1914, when the great European war began, Germany looked upon Italy as pledged to come to the aid of the central empires, but the Italian government refused to be bound by the agreement, maintaining that the war which had broken out was one of offense, not of defense. Since the alliance had been made the political relations of Europe had materially changed, and the sympathy of Italy lay rather with the so-called Entente powers than with the Teutonic empires. During the greater part of the opening year of the war Italy stood aloof, declining to be drawn into the struggle. But it was busy in preparation for possible hostile relations, General Cadorna, its capable 'chief of staff,' making active military preparations, covering the training of the regular army of Italy and the gathering of military supplies for possible contingencies. More or less hostile relations had for over a century existed between Austria and Italy, the latter country maintaining that the mountain region of the Trentino and the region bordering on the seaport of Trieste belonged to Italy and had been unjustly incorporated into the Austrian empire. This sentiment was strongly felt by the Italian people, the government eventually yielded to the de-

sire of the nation, and on May 24, 1915, Italy formally declared war against Austria. The contest that followed was one of remarkable character. It was almost completely a mountain war, the battle fronts being stretched along the highest altitudes at which warfare has ever been carried on. All the advantageous positions were in prior possession of the Austrian forces, which had to be faced in their nests amid the snow-clad Alpine summits at a height of 10,000 feet above sea level. It was a powerful, well-supplied and well-organized army with which General Cadorna began this work. The Tyrolese mountain city of Trent, which dominates a region claimed as a normal part of Italy, was one of the strongholds upon which Italy centered its efforts, the other being the seaport of Trieste at the northeastern extremity of the Adriatic Sea, also claimed as former Italian territory. The war directed towards these strongholds of Austria continued for over two years, the Italian forces pushing their way northward and eastward, over the mountain summits and through their valleys, the army fighting with a courage and energy that gave them a strong hold on the approaches to the points of vantage.

This vigorous forward movement of the Italian armies was of great advantage to the Entente powers, which Italy had informally joined. It held a great part of the Austrian army in the Tyrolese mountain region and deprived Germany of the aid of the latter to an important degree. Italy began her advance just at the time that the Russian army was obliged to retreat from Galicia, and Cadorna's strong army may have saved the forces of Russia from complete disaster. The same may be said of the war on the western frontier. At the time when the German attack on Verdun began Cadorna made a strenuous advance along the Isonzo River, this preventing Austria from sending to the aid of the German Crown Prince the large number of troops and artillery which had been prepared for that purpose. At a later date, when the Austrians had gained a small section of Italian territory, Cadorna attacked them with such energy that it was impossible to move troops against the Russians who at this date, July, 1916, were penetrating the Carpathians in their most vigorous movement of offense. The great effort of Italy during 1917 was directed against the port of Trieste, the army pressing forward from point to point over the mountain ridges by which nature had guarded that stronghold, until it began to seem as if Austria's chief seaport was doomed and the great effort of Cadorna and his army was to lead to a vital Austrian defeat.

In November, 1917, however, the Austrians, heavily reinforced by the Germans, made a sudden assault upon the Italians, who had been demoralized by peace propaganda, and the shattered armies were compelled to retreat to the line of the Piave. General Diaz replaced Cadorna, and a new attitude of defiance swept through the ranks. Aided by detachments of French and British troops the Italians flung themselves on the Austrians with irresistible impetuosity and compelled the enemy to surrender. The armistice with Austria-Hungary was signed November 3, 1918. Italy had a million casualties, and her war expenditure was $12,000,000,000. As a result of the war Italy gained a large section of territory formerly held by Austria-Hungary (*see Treaty*), all of the Irredenta (q. v.) being reclaimed, including Trieste and the Trentino. D'Annunzio (q. v.) took Fiume by *a coup*.

Italy, Literature of.—The Italian language is one of the Romance tongues, or tongues derived from the Latin, and is therefore a sister of French, Spanish, and Portuguese. It is derived not from the literary language of Rome as we know it, but from the old popular dialect or *Lingua Romana rustica*. German races contributed words to its vocabulary. Latin kept its place so long here in its natural home that the new popular speech was slow to develop; and in fact the earliest literary products of Italy are poems written in the Provençal and French languages. But about the close of the thirteenth century native poets arose, who indeed imitated the Provençals as to the form of their compositions, but wrote in their own language. Among the most important of these early poets is the Florentine, Guido Cavalcanti (died 1300), who contributed much to the development of Italian language and poetical style. But the great luminary of this period, and by far the greatest poetic genius which Italy has produced, was Dante (1265-1321). (See *Dante*.) In Italian prose the oldest book is Ristoro d'Arezzo's *Composizione del Mondo*, written about the middle of the thirteenth century. In this department Dante also takes a high place with his *Vita Nuova*, and *Convito*. Francesco Petrarca (Petrarch, 1304-74), another of the great lights of Italian literature, exhibits in his sonnets and canzoni a vein less profound and transcendental than Dante's, but more humanly tender and passionate. Boccaccio (1313-75), a writer of great erudition and fertility, who produced classical translations, biographies, poems, etc., is Italy's first great story teller. He is the master of the ornate classical style in prose to which he first gave high artistic form. His great work

is the *Decamerone*, a collection of a hundred tales. Among the other productions of the time are the historical works of Giovanni Villani and Dino Compagni, the latter of great value, though doubtful authenticity, the travels of Marco Polo, and the letters of St. Catherine of Siena. Among the comic poets of the time are Bindo Bonichi, Cecco Nucoli, Andrea Orgagna and Antonio Pucci.

During the fifteenth century the intellectual energy of Italy was almost entirely absorbed in the study of the ancient classics. This period is known as the Renaissance, or the revival of arts and letters. Italy had at this time become wealthy by commerce, and was enjoying comparative peace. Her cities were full of learned Greek refugees from Constantinople; many of her states were ruled by families such as those of the Medici at Florence, the Este in Ferrara, the Gonzaga in Mantua, whose names are identified with the most munificent patronage of learning and art. In the midst of this classical enthusiasm there was some danger of the national literature and language being neglected, but towards the end of the century Italian literature revived with the *Canto Carnascialesco* of Lorenzo de Medici and *Ballate* of Poliziano, the chivalrous epic *Orlando Innamorato* of Boiardo, the *Morgante Maggiore* of Luigi Pulci, and the *Mambriano* of Francesco Bello (Cieco of Ferrara).

During the first half of the sixteenth century the Renaissance movement perfected itself in every kind of art. In history the most noted names are Machiavelli (1469-1527), and Francesco Guicciardini (1482-1540). Among the great poets of the period are Lodovico Ariosto (1474-1533), author of *Orlando Furioso*, a romantic epic, written in continuation of the *Orlando Innamorato* of Boiardo, and Torquato Tasso (1544-95), whose *Gerusalemme Liberata* is Italy's chief heroic poem. Among the lyrists of this century we may mention Guidiccioni of Lucca, Pietro Bembo, Michelangelo Buonarroti, and Vittoria Colonna. Berni, Cammelli and Grazzini deserve mention among humorous and burlesque writers, and Bandello among story tellers. Better known, however, are Giorgio Vasari (1512-74), himself an eminent painter, but more celebrated as a delightful gossip on art and artists; Benvenuto Cellini (1500-70), the famous artist in metal, whose autobiography is one of the most instructive lights on the spirit and manners of the age, and Giordano Bruno (1550-1600), a bold speculator and undaunted champion of liberty of thought. In the period which followed poetical and imaginative literature degenerated into mannerism and affectation. Of exceptional power was Alessandro Tassoni (1565-1635), who wrote the *Secchia Rapita*, a burlesque epic, and unquestionably the most important poetical production in Italian of the seventeenth century. Salvator Rosa, also, better known as a painter, wrote satirical verse of some merit. But the most eminent names of this period are those of scientific and philosophic writers. Among the former are Galileo Galilei (1564-1642), Torricelli (1608-1647), Viviani (1622-1703); among the latter are Tommaso Campanella (1568-1639), and Giambattista Vico (1668-1744). Among historians the names of Sarpi, Davila, Bentivoglio, and Pietro Giannone deserve mention. Towards the end of the century a new school of poetry arose, which was mainly a reaction against the existing turgid and affected style. The Academy of Arcadia was instituted (1690) to promote simplicity of style and the choice of simple pastoral subjects. The Arcadians produced no considerable poet, the chief names being Crescimbeni, Gravina, Frugoni and Zappi.

About the middle of the eighteenth century a complete revolution took place in Italian literature, which was preceded and accompanied by a general elevation of public life. The influence of English and German literature began to communicate a more healthy tone to the national literature. Gasparo Gozzi (1713-86) in the periodical *L'Osservatore*, and Giuseppe Baretti in a journal called the *Frusta Letteraria*, contributed perhaps more than any others, by their forcible and lively satire, to bring about this improvement. In dramatic literature the libretti of Pietro Trapassi (1698-1782), better known by his assumed name of Metastasio, had considerable merit, though tending to over-refinement of sentiment and expression. In 1713 Scipione Maffei, celebrated also as an archæologist, produced the tragedy of *Merope*, highly lauded at that time. But the two great names in the Italian drama are, in comedy, Carlo Goldoni (1512-74), and in tragedy, Vittorio Alfieri (1749-1803). Towards the end of the century the writings of the publicists, Gaetano Filangieri and Cesare Beccaria indicated the growth of a social science under the cover of treatises on legislation and penal laws.

From the intellectual and political ferment which arose about the beginning of the nineteenth century Italy in particular received a much-needed stimulus. In poetry Ugo Foscolo (1776-1827), though following classical models and

traditions, writes with the force and novelty of a new epoch. Vincenzo Monti (1754-1828), had a rich poetic vein and a facile talent. Giambattista Niccolini (1781-1861), another poet of the same school, espoused liberal ideas and opened a new path to Italian tragedy. The historians of the period were Carlo Botta (1766-1837), and Pietro Colletta (1775-1831). Alessandro Manzoni (1784-1883) has given Italy a few lyrics of the first rank, but his greatest work was *I Promessi Sposi*, a historical novel, eminently realistic in style, with powerful objective creation of character. A place almost equally high is held by Giacomo Leopardi (1798-1837), the greatest lyric poet since Dante, and one of the most perfect writers of prose. The historico-political writings of Vincenzo Gioberti (1801-52), and Guiseppe Mazzini (1805-72) contributed powerfully to stimulate national feeling. After the year 1850 political literature became less important. The dominating figure of this later period was Giosuè Carducci (1836-1907), who opposed the Romantics, and who, though so great as a poet, was also a distinguished critic and historian. Other poets are Chiarini, Guoli, Graf, Mazzoni, Marradi, Pascoli, Panzacchi, Guerrini (Lorenzo Stecchetti), Ada Negri, Baccelli and Rapisardi. The dramatists include Cossa, Testa, Martini, and Ferrari, representing the older schools, and Giacosa and Rosetta, representing the modern. Gabriele d'Annunzio (born 1848), who has produced extraordinary works not only in drama but in poetry and fiction, may be said to represent the literary aspirations of young Italy. Guglielmo Ferrero (born 1872), is widely known as a historian, and Edmondo de Amicis (1843-1908), as a writer of philosophy, travels and fiction.

Itasca Lake. See *Mississippi River.*

Itch (ich), a contagious cutaneous disease, appearing in small watery pustules in the skin, accompanied with uneasiness and irritation that inclines the patient to rub and scratch. It is occasioned by a small insect (*Acārus scabiei*), which burrows within the epidermis; and is cured by sulphur, which should be applied externally in the form of ointment. See next article.

Itch-mite (ich-mit; *Acārus scabiei* or *Sarcoptes scabiei*), a microscopic insect belonging to the class Arachnida, which produces an itch in man. The female burrows in the skin, in which she deposits her egg, which are hatched in about ten days, which gives rise to this troublesome and irritable affection.

Ithaca (ith'a-ka), NOW THIAKI, one of the Ionian Islands, on the west of Greece, between the mainland and Cephalonia, 17 miles long, and not above 4 broad. It is rugged and uneven, and divided into nearly equal parts, connected by a narrow isthmus. The inhabitants are industrious agriculturists and mariners, and build and fit out a considerable number of vessels. They seem to be of pure Greek race, and the women are famed for their beauty. Ithaca was the royal seat of Ulysses, and is minutely described in the Odyssey. Schliemann has recently made important excavations, and has identified several sites mentioned by Homer. Vathi, the modern capital, trades largely in oil, wine, raisins, and currants, and has a pop. of about 6000; that of the island is about 1[illegible]000.

Ithaca, a city of New York, the capital of Tompkins County, about 1½ miles S. of the head of Cayuga Lake, is the seat of Cornell University (which see). It has numerous manufactures and important coaling interests, is one of the Barge Canal terminals, and has in its vicinity much picturesque scenery, abounding in waterfalls. Pop. 14,802.

Ito, PRINCE HIROBUMI, a Japanese statesman, born in 1841. After visiting Western countries he became an active reformer, and was made premier in 1886. This position he had occupied four times when he resigned in 1901. He was the father of the present Constitution of Japan, and played a leading part in many great reforms. After the war with Russia he was given the task of converting Corea, into a Japanese province, and as part of this duty he compelled the Corean king to sign away his sovereign rights, thus winning the hatred of the Coreans. In 1907 he was raised to the dignity of Prince and in 1909 recalled to become president of the privy council. While in Harbin he was assassinated by a Corean, on October 26, 1909.

Ito, COUNT YUKO, a Japanese naval commander, born in Satsuma province in 1843. He became rear-admiral in 1886, and admiral in 1898. He was in command of the combined Japanese squadrons in the great battle of the Yellow Sea, September 7, 1894, and did much to bring the war with China to a happy close. For his services in the war he was created a viscount and appointed chief of the naval general staff, a part which he held during the Russo-Japanese war. He died January 14, 1914.

Itri (ē'trē), a town of South Italy, in the province of Caserta, 6 miles N. W. of Gaeta, on a hill. Pop. 5677.

Itu (ē'tō), HITU', or YTU', a town of Brazil, province of Sao Paulo, on the Tiete. Pop. 10,000.

Ituræa, ITURE' (ē-tu-rē'a), a district on the north of ancient Palestine, stretching northeastward from Mount Hermon.

Iturbide (ē-tur'bē-dā), AUGUSTIN DE, a distinguished Spanish-American, born at Valladolid, in Mexico, in 1787. On the breaking out of the revolutionary troubles in Mexico he joined the royalist party, and displayed such valor and ability that in 1815 he rose to the chief command of the army, but latterly went over to the other side, quickly bore down all opposition, and became so popular that he proclaimed himself Emperor of Mexico in 1822. His reign was full of trouble, and came to an end in less than a year, by his abdication. Congress granted him a yearly pension on condition of his leaving the country, and he resided in Leghorn about a year, when he made an attempt to recover the crown. He landed with but a single attendant, and was arrested and shot, 1824.

Itzehoe (it'se-hō), a town of Prussia, in Schleswig-Holstein, in a valley enclosed by wooded hills, on the Stör, 32 miles northeast of Hamburg. It is the oldest town in the duchy, being founded by Charlemagne in 809. Pop. 15,649.

Iulus (i-ū'lus), a genus of *Myriapoda*, order Chilognatha, including worm-like animals known as millipedes, allied to the centipedes.

Ivan (ē'van), or IWAN, the name of several rulers distinguished in Russian history.—IVAN III (or I), grand-prince of Moscow, was born in 1440; ascended the throne in 1462; died in 1505. He greatly enlarged his hereditary possessions, and married Sophia, niece of the last Byzantine emperor, thus introducing the double-headed Byzantine eagle into the Russian coat of arms. He was the first that bore the title of Czar of Great Russia, and proclaimed the unity and the indivisibility of the Russian dominions.—IVAN IV (or II), grandson of the former, was born in 1530; succeeded in 1534, was crowned in 1547; died in 1584. His atrocities gained him the name of *The Terrible*. Yet he did much to civilize and improve his people, introduced learned men, artists and mechanics into Russia, and concluded a commercial treaty with England. He killed his eldest son in a fit of rage.

Ivanovo (ē-vō'nō-vō), a town of Russia, government of Vladimir, an important center of the Russian cotton manufacture, and hence styled 'the Russian Manchester.' Pop. (1912) 167,726.

Ives (IVZ), ST., a seaport town of England, in Cornwall, picturesquely situated on St. Ives Bay, 18 miles W. N. W. from Falmouth. Pop. 7179.

Ives (IVZ), FREDERICK EUGENE, an American inventor especially noted for his work in photography, born at Litchfield, Conn., Feb. 17, 1856. He has invented processes in halftone, photo-engraving, orthochromatic photography, and color photography.

Iviça (ē'vith-ā; ancient *Ebdeus*), an island of the Mediterranean belonging to Spain, 52 miles from Majorca, one of the Balearic Islands; area, 190 square miles; pop. 25,505. It is fertile, producing corn, wine, oil, fruit, etc. Salt forms, with fish and wood, the chief export. The capital is of the same name, and has a good harbor. Pop. 23,524.

Ivory (ī'vu-ri), the osseous matter of the tusks of the elephant, and of the teeth or tusks of the hippopotamus, walrus, and narwhal. Ivory is esteemed for its beautiful white or cream color, its hardness, the fineness of its grain, and its susceptibility of a high polish. That of the African elephant is most esteemed by the manufacturer for its density and whiteness. It is used as a material for knife-handles, pianoforte keys, etc. The ivory of the hippopotamus is preferred by the dentist, being free from grain and much harder and of a purer white than that of the elephant. The shavings and sawdust of ivory may by burning be converted into a black powder, used in painting, named *ivory black*. Ivory may be stained or dyed; a black color is given it by a solution of brass and a decoction of logwood; a green one by a solution of verdigris; and a red by being boiled with Brazil wood in lime-water. The use of ivory, chiefly for ornamental purposes, was well known in early ages. Among the Greeks it was employed for statuary purposes, etc. The medium weight of an elephant's tusk is 60 lbs., but some are found weighing 170. Ivory is an important article of African trade, and the number of elephants annually killed must be great; indeed, the extermination of this noble animal is only a question of time.

Ivory, VEGETABLE. See *Ivory-palm*.

Ivory-black, a fine kind of soft black pigment, prepared from ivory dust by calcination, in the same way as bone-black. See *Bone-black*.

Ivory Coast, part of the coast of Guinea, between Cape Apollonia and Cape Palmas. The eastern portion of it belongs to Britain.

Ivory-nuts. See *Ivory-palm.*

Ivory-palm (*Phytelephas macrocarpa*), a low-growing, palm-like plant, order Pandaneceæ, native of the warmer parts of South America. It has a creeping caudex or trunk, terminal pinnatifid leaves of immense size, male and female flowers on different plants, and fruit in the form of a cluster of drupes, weighing about 25 lbs. when ripe. Each drupe contains 6 to 9 seeds, as large as a hen's egg, the albumen of which when ripe is close-grained and very hard, resembling the finest ivory in texture and color. It is therefore often wrought into buttons, knobs for doors or drawers, umbrella handles and other articles, and is called *Vegetable Ivory.* The seeds are also known as *Corozo-nuts,* and are imported in considerable quantities.

Ivrea (iv-rā'a), a town of North Italy, province of Turin, picturesquely situated on the Dora Baltea, with a cathedral, said to have been founded in the fifth century on the site of a heathen temple. Pop. 11,696.

Ivry-la-Bataille (iv-rē-lá-bá-tá-yē), a village in France, 40 miles W. of Paris, where a battle was gained by Henry IV in 1590 over the forces of the League.

Ivry-sur-Seine (iv-rē-sûr-sen), a town of France, on the Seine, 3 miles S. S. E. from Paris. It has a fine church, the remains of an old castle, asylum for lunatics, various manufactures, and extensive wine cellars hewn out of the rock. Pop. 35,455.

Ivy (ī'vi), a climbing plant of the genus *Hedera* (*H. Helix*), nat. order Araliaceæ. The leaves are smooth and shining, varying much in form, from oval entire to three and five lobed; and their perpetual verdure gives the plant a beautiful appearance. The flowers are greenish and inconspicuous, disposed in globose umbels, and are succeeded by deep green or almost blackish berries. *H. Helix* (the common ivy) is found throughout parts of Asia and Africa. It is plentiful almost the whole of Europe, and in many in Britain, growing in hedges, woods, on old buildings, rocks and trunks of trees. A variety, called the Irish ivy, is much cultivated on account of the large size of its foliage and rapid growth. Several varieties of ivy are grown in American gardens. The ivy attains a great age, and becomes several inches thick. The wood is soft and porous, and when cut into very thin plates may be used for filtering liquids. In Switzerland and the south of Europe it is employed in making various useful articles. The ivy has been celebrated from remote antiquity, and was held sacred in some countries, as Greece and Egypt. Its medicinal properties are unimportant. Chinese ivy (*Parechites Thunbergii*) is a climbing shrub with privet-like leaves and sweet-scented flowers.

Ixia (iks'i-a), a genus of plants of the Iris family, natives of the Cape of Good Hope, and prized for their large and showy flowers.

Ixion (iks'i-on), in Greek mythology, king of the Lapithæ in Thessaly, who for his wickedness was punished in the infernal regions by being tied to a perpetually revolving fiery wheel.

Ixmiquilpan (ēs-mē-kwēl'pan), a town of Mexico, State of Hidalgo, 80 miles north of the city of Mexico, with silver mines in its neighborhood. Pop. about 12,000.

Ixodes (iks-ō'dēs), the '*Ticks*' (which see).

Ixtle (iks'tl), a Mexican fiber, probably the production of a species of the pineapple family.

Izdubar (iz'dū-bâr), a hero of early Babylonia, possibly a real personage, but converted into a deity and worshiped. In the cuneiform inscriptions feats similar to those of Hercules are ascribed to him.

Izucar (ē-sō-kär'), a town of Mexico, 90 miles southeast of the capital, at the base of Popocatepetl, the center of a rich sugar region. Pop. about 9000.

J

J, the tenth letter in the English alphabet, and the seventh consonant. The sound of this letter coincides exactly with that of *g* in *genius*. It is therefore classed as a palatal, and is the voiced sound corresponding to the breathed sound *ch* (as in *church*). The sound does not occur in Anglo-Saxon, and is introduced through the French. As a character it was formerly used interchangeably with *i*, and the separation of these two letters in English dictionaries is of comparatively recent date.

Jaal-Goat (jā'al-gōt; *Capra Jaela*), a species of goat found in Egypt, Abyssinia and Mount Sinai.

Jabalpur (jē'-bel-pōr), JUBBULPORE, a town of Hindustan, capital of Jabalpur district, Central Provinces, a modern town with wide and regular streets, an important railway station and center of trade, situated amid rocks at an elevation of about 1500 feet above the level of the sea. It has a school of industry, in which large quantities of tents and carpets are made. Pop. 100,650. The district has an area of 3918 sq. miles, a pop. of 687,233. A division or commissionership of the Central Provinces has also the same name. It has an area of 18,688 sq. miles; a pop. of 2,201,638.

Jabiru (jab'i-rū), a name of wading birds of the crane kind, resembling the stork, and inhabiting South America, Africa and Australia.

Jaborandi (ja-bo-ran'di), a powerful drug obtained from the leaves and root of one or more plants of the genus *Pilocarpus*, order Rutaceæ, natives of Brazil. It causes a great increase of the saliva and profuse perspiration.

Jacamar (jak-a-mär'; *Galbŭla*), a genus of brilliant birds nearly allied to the kingfishers, differing however by the form of their beak and feet. They live in damp woods, and feed on insects. Most, if not all, are natives of tropical America.

Jacana (jak'a-na), the common name of grallatorial or wading birds of the genus *Parra*, having long toes with very long nails, so that they can stand and walk on the leaves of aquatic plants when in search of their food, which consists of worms, small fishes, and insects. They inhabit marshes in hot climates, and somewhat resemble the moorhen, to which they are very closely allied.

Long-tailed Jacana (*Parra sinensis*).

Jacaranda (jak-a-ran'da), a name of several South American trees, nat. order Leguminosæ, yielding the fancy woods known as violet-wood, kingwood, and tigerwood. A genus of Brazilian tree is also called *Jacaranda*, and some species of it yield rosewood. It belongs to the nat. order Bignoniaceæ.

Jacare (jäk'ä-rä), a species of Brazilian alligator, *Jacare* or *Alligator sclerops*.

Jacitara-palm (ja-si-ta'ra-pām; *Desmoncus macroacanthus*), a palm found in the forests of the lowlands of the Amazon district in South America. It has a slender flexible stem, often 60 or 70 feet long.

Jack (jak), from Fr. *Jacques*, James, which being a very common personal name in France, came to stand for any common fellow or menial, and was substituted for the equally common English name John. Hence its application in such terms as *boot-jack*, *smoke-jack*, *roasting-jack*, etc., and also in several senses alone, as to the knaves in a pack of cards, the small bowl aimed at in a game of bowls, and a small pike as opposed to the full-grown fish. There are also such uses as *Jack-of-all-trades*, *Jack-knife*, *Jack-fool*, *Jack-ass*, *Jack-pudding*, etc.; also a *jack* is an apparatus for raising great weights by the application of strong screws. The flag called a *jack*

is strictly one displayed from a staff on the end of the bowsprit. See *Union Jack.*

Jack, or JACA (*Artocarpus integrifolia*), a tree of the bread-fruit genus, a native of India. The fruit grows to a larger size than the bread-fruit, often weighing more than 30 lbs.; but it is not so palatable.

Jackal (jak'al), an animal of the dog genus (*Canis aureus*), resembling a dog and a fox, a native of Asia and Africa. The general color is a dirty yellow. The jackal is gregarious, hunting in packs, rarely attacking the larger quadrupeds. They feed chiefly on carrion, and are nocturnal in habits. The jackal interbreeds with the common dog, and may be domesticated. The common jackal is the most widely distributed. The jackal follows the trail of the larger carnivora as they roam the country for prey, in the hope of securing some share of the creatures which they destroy or wound. It has been called the Lion's Provider by reason of its companionship with the larger animal. As a matter of fact the lion is the jackal's provider oftentimes. The black-backed jackal (*C. mesomelas*) is an inhabitant of South Africa and abounds in the Cape Colony, Union of South Africa; sometimes called the Cape jackal. It is similar in size to the common jackal, but is distinguished from that animal by the mottled black and white spots on its back. Jackals are hunted with foxhounds and greyhounds in some parts of India.

Jack-a-Lantern. See *Ignis Fatuus.*

Jackass, LAUGHING. See *Laughing Jackass.*

Jack-boots, large boots reaching above the knee, used by horsemen (military and other) as a sort of protection for the legs.

Jackdaw (jak'da; *Corvus monedula*), a common European bird of the crow family, smaller than the rook, having a comparatively short bill and whitish eyes; hinder part of the head and neck of a grayish color, back and wings glossy black. The average length is about 12 inches. The nests are built in towers, spires, and like elevated situations, and often in towns. The eggs, from five to six, are of a greenish color. Its food consists of worms, insects and larvæ. Like the rooks, they are gregarious. They are readily domesticated, and may be taught to pronounce words distinctly.

Jack-in-the-Pulpit, the popular name given to a species of *Arum*, common in wet woodlands in the United States. The name comes from its erect spathe, standing within the long sheath of its petioles. The fruit is bright scarlet berries.

Jack-Rabbit, or jackass rabbit, a large rabbit (*Lepus callotis*) of the Western United States. It has very long ears and its gait is a series of long leaps.

Jackson, a city, county seat of Jackson county, Michigan, 76 miles west of Detroit, on the main line of the Michigan Central Railroad: an important railroad center, with eight railroad divisions radiating in all directions. Its largest industries include manufactures of automobiles, auto parts, agricultural implements and corsets. The Michigan State prison is located here. Pop. 35,000.

Jackson, a city, county seat of the State of Mississippi, on the Pearl River, in the center of the State, served by eight railroads. It has government buildings, a number of colleges and other institutions. Agricultural implements, machinery, cottonseed oil, lumber, sashes, doors, blinds, wagons, mattresses, spokes, fertilizer, brooms, coffins and cane syrup are manufactured. The city is the center of the timber belt. Pop. 25,000.

Jackson, a city, county seat of Jackson county, Ohio, 44 miles N. E. of Portsmouth, on three railroads. Coal and iron ore are largely mined and there are iron furnaces, flour, woolen and lumber mills, glass plant, etc. Pop. 5964.

Jackson, a city, capital of Madison county, Tennessee, on the Forked Deer River and several railroads, 90 miles E. N. E. of Memphis. It has varied industries, and ships thousands of bales of cotton annually; also has large grain shipments. Here is the Southern Baptist University and other institutions of learning. Pop. 15,779.

Jackson, ANDREW, soldier and President, was born in the border region of North and South Carolina, in 1767, of Irish ancestry. In his 14th year, during the war of the Revolution, he joined a regiment of volunteers to fight in the cause of independence. After losing two brothers in the struggle and himself receiving a severe wound, he left the military service and engaged in the study of law, removing in 1788 to Nashville, Tennessee, when he began practice. He took part in framing the Constitution of Tennessee, was elected to the United States Senate in 1797, and resigned and became a judge in the Supreme Court of Tennessee in 1798. When, in 1812, war was declared against England, he was made major-general of the Tennessee militia and in 1813 marched against the Creek Indians, then

in serious revolt, and completely defeated them. He was subsequently ordered to the defense of New Orleans against the British invasion of 1814, and in 1815 repulsed the invading forces with great loss. In 1817-18 he fought against the Seminole Indians of Florida, worsted them, and in 1821 was made governor of Florida, which Spain had sold to the United States. He was elected United States Senator again in 1823, and ran for President in 1824. Though he had the largest vote, he failed to obtain a majority over the other candidates, and lost the election by the vote of the House of Representatives. He was elected in 1828 and again in 1832, and in 1836 had Martin Van Buren elected by his influence. An honest and upright man, he was dictatorial and obstinate, and his career was sullied by several acts of undue severity. In 1837 he retired to his estate in Tennessee and died there on June 8, 1845.

Jackson, CHARLES THOMAS, scientist, was born at Plymouth, Massachusetts in 1805, and was graduated at Harvard Medical College in 1823. He was appointed State geologist of Maine in 1836 and of New Hampshire in 1840, and published reports on their geology; also *Mineralogy and Geology of Nova Scotia*. He claimed to have been the first to point out, in 1832, the applicability of electricity to telegraphy, and also to have been the original discoverer of anæsthetics. He received for this the Montegau prize of 2500 francs from the French Academy of Sciences in 1852. He died in 1880.

Jackson, HELEN HUNT, authoress, was born at Amherst, Massachusetts, in 1831; died in 1885. She married a Mr. Hunt, who died in 1863, and afterwards a Mr. Jackson. Removing to Colorado Springs, Colorado, she became warmly interested in the treatment of the Indians by the government, and strove earnestly to better their condition. She was appointed in 1883 to investigate the condition of the Nassau Indians of California, and studied the history of the early Spanish missions. She wrote on the Indian subject *A Century of Dishonor*, also *Verses by H. H.*, *Bits of Talk*, etc.

Jackson, THOMAS JONATHAN, better known as *Stonewall Jackson*, a general in the Confederate army, born in 1824 in Virginia. In 1842 he entered the military academy at West Point as cadet. Four years later he received a second-lieutenant's commission, and was engaged in the Mexican war, and for his gallantry was made a captain, and afterwards raised to the rank of major. In 1861 he resigned his commission and was appointed professor of mathematics and artillery tactics in the military institute at Lexington, Virginia. On the outbreak of the Civil war, in 1861, he entered the Southern army with the rank of brigadier-general. He commanded the reserve at Bull Run, and acquired his cognomen of 'Stonewall' by the firmness of his troops and his own coolness in the heat of the action. By the end of the year he was made major-general. In June, 1862, he repelled Fremont at Cross Keys, and routed McDowell near Port Republic. He took a leading part in the second battle of Bull Run, captured Harper's Ferry in September, during Lee's March to Antietam, and was prominent in the subsequent battle of Antietam. He also took part in the battle of Fredericksburg and the victory at Chancellorsville was largely due to him. He was wounded inadvertently by his own men in this battle, and died May 9, 1863. He was a man of indomitable energy and deep religious feeling, and was regarded as a soldier of remarkable ability, greatly aiding General Lee by his daring and brilliant movements.

Jackson, WILLIAM, an English musical composer, born in 1730; died in 1803. Having studied music in London, in 1777 he was made organist of the cathedral in his native city, Exeter, where he passed the rest of his life. His musical compositions, especially his songs and duets, are still justly popular, and are distinguished by chasteness of conception, ingenuity and truth of expression.

Jacksonville, a city of Florida, capital of Duval county, on the St. John's River, about 25 miles from its mouth. The river is navigable for steamboats 200 miles farther up. Jacksonville is the largest city and the center of commerce for Florida, while its mild winter climate has made it a popular place of resort. It has a large trade in naval stores, lumber, etc., and has shipyards, engineering works, iron-foundries, and various other industries. There is here a Confederate Soldiers' Home and a National Marine Asylum. Pop. 57,699.

Jacksonville, a city of Illinois, on a fertile prairie, near a small affluent of the Illinois River. It has been called the '*Athens of the West*,' and is distinguished for the elegance of its public buildings, and for the number of its educational and charitable institutions, among which are the Illinois College, the State asylums for the blind, the insane and the deaf and dumb. It has

large woolen mills, carriage factories, planing mills, etc. Pop. 15,326.

Jacob (jā'kŭb), the son of Isaac, and the grandson of Abraham, the last of the Jewish patriarchs, and the true ancestor of the Jews. Having craftily obtained from the blind and infirm Isaac the blessing of the first-born in place of his brother Esau, he was obliged to flee from the anger of his brother, and took up his abode with his uncle Laban. Here he served twenty years, and obtained Leah and Rachel as his wives. On his return to Canaan he was met by an angel, with whom he wrestled all night, and having gained the victory was thereafter named *Israel*, that is, *the hero of God*. Hence the Hebrews from him are called *Israelites*. A severe blow to him in his old age was the loss of his favorite son Joseph, whose brothers had sold him to Ishmaelite merchants, and led Jacob to believe that he had been devoured by wild beasts. Joseph subsequently became the highest officer at the court of Pharaoh in Egypt, and thus was the means of bringing the whole house of his father to that country. Jacob died, aged 147 years, approximately about 1860 B.C., and according to his wish was buried in the tomb of Abraham, before Mamre in Canaan.

Jacobabad (ja-kob-ä-bäd'), a town of Hindustan, the military and civil headquarters of the Upper Sind frontier district, Bombay. Pop. 11,552.

Jacobean Architecture, a term applied to the later style of Elizabethan architecture from its prevailing in the time of James I (L. *Jacōbus*, James). It differed from the pure Elizabethan chiefly in having a greater admixture of debased Italian forms.

Jacobi (yä-kō'bi), FRIEDRICH HEINRICH, a German philosopher, born in 1743; died in 1819. He first engaged in commerce, but quit business on receiving a public appointment. He formed acquaintance with many of the most eminent literary men of the day, including Goethe, Wieland and Herder. Subsequently he was made president of the Bavarian Academy at Munich, retiring in 1813. His views had some analogies with those of Hamilton and the Scotch school. Thought, he affirms, cannot explain facts but only connect them. The existence of objects that affect us cannot be demonstrated, but we are directly convinced of their existence in the act of perception. The knowledge of God is present to us through the heart in virtue of the divine spirit within us, which comes directly from God. His most noted works are the philosophic novels, *Allwill's Briefsammlung* and *Woldemar*; a work on the doctrine of Spinoza, in Letters to Moses Mendelssohn; *David Hume über den Glauben*, or *Idealism and Realism*.

Jacobins (jăk'u-binz), the most famous of the clubs of the first French revolution. When the states-general assembled at Versailles in 1789, it was formed and called the *Club Bréton*.

Jacobean Architecture.—Waterston Hall, Dorset.

On the removal of the court and national assembly to Paris it acquired importance and rapidly increased. It adopted the name of *Société des Amis de la Constitution*, but as it met in a hall of the former Jacobin convent in Paris, it was called the Jacobin Club. It gradually became the controlling power of the revolution, and spread its influence over France, 1200 branch societies being established before 1791, and obeying orders from the headquarters in Paris. In 1791 the publication of the *Journal de la Société des Amis de la Constitution* increased the zeal and number of the societies. The Jacobins were foremost in the insurrectionary movements of June 20 and August 10, 1792; they originated the formidable *commune de Paris*, and changed their former name to *Les Amis de la Liberté et de l'Egalité*. For a while they ruled supreme, and the Convention itself was but their tool. Robespierre was their most influential member; they ruled through him during the Reign of Terror, and were overthrown after his

downfall in 1794. In that year the Convention forbade the affiliation of societies; the Jacobin Club was suspended and its hall was closed. The term Jacobin is now used in Britain to designate anyone holding extreme views in politics.

Jacobites (jak'u-bīts), a party in Britain (so styled from Lat. *Jacōbus*, James), who after the revolution in 1688 continued to be the adherents of the dethroned King James II and his posterity. In Ireland they were soon put down by conquest. In England the revolution was accomplished with the apparent consent of all parties; but in a year or two the Jacobite party gained considerable influence, and continued to disturb the government of William throughout his reign. After the accession of Anne and the death of James their efforts slackened for a time; but towards the close of her reign they revived. Bolinbroke and Oxford, with others of the Tory ministers of Anne, were in treaty with the son of James II, and either really or pretendedly negotiated for a restoration. On the arrival of George I in 1715 a rebellion broke out in Scotland, supported by a more insignificant rising in the north of England. The failure of both these movements damped the enthusiasm of the English Jacobites, but in Scotland the party maintained its influence until the unsuccessful rebellion of 1745 put an end to its political importance, though some ultra-Jacobites did not think themselves justified in transferring their allegiance to the house of Brunswick till the death of Cardinal York, in 1807. The hopes and wishes of the Scottish Jacobites found expression in many beautiful songs, which form an interesting portion of the national literature.

Jacobites, Monophysite Christians in the East, who were united by a Syrian monk, Jacobus Bardai (578), during the reign of Justinian, into a distinct religious sect. The Jacobites, so styled from their founder, consist of about 30,000 or 40,000 families, and are governed by two patriarchs, appointed by the Turkish governors, one of whom, with the title of the *Patriarch of Antioch*, has his seat at Diarbekir; the other resides in a monastery near Mardin, under the style of *Patriarch of Jerusalem*. Circumcision before baptism and the doctrine of the single nature of Christ (hence their name *Monophysites*) are common to them with the Copts and Abyssinians; but in other respects they deviate less than the other Monophysites from the discipline and liturgy of the orthodox Greek Church.

Jacob's Ladder (*Polemonium caeruleum*), a herbaceous perennial plant, common in the center and south of Europe and found in the temperate parts of Asia and North America. It has a smooth stem about 2 feet high, and a terminal panicle of bright blue (sometimes white) flowers. Great medicinal virtues were once ascribed to it, but all now found in it is a slight astringency.

Jacquard (zhäk-är), Joseph Marie, the inventor of the famous machine for figured weaving named after him, was born at Lyons in 1752. His parents were silk weavers, and he learned the same trade. After a long period of hardship, during which he shared in some of the campaigns of the revolution, he made his name famous by the invention of his new loom, which was publicly exhibited in 1801. He endeavored to introduce it into general use in Lyons, but was mobbed, and all but lost his life. Ultimately, however, his invention was bought by the French government, and he was able to spend the latter part of his life in comfortable independence. The subsequent prosperity of Lyons is largely attributable to his invention, and a more enlightened generation erected a statue to him on the very spot where his loom had been destroyed by the mob. He died in 1834.

Jacquard Loom, a form of loom, the characteristic of which is a contrivance appended to it for weaving figured goods in various colors. See *Weaving*.

Jacquerie (zhäk-rē), the name given to the rising of the French peasantry against their lords in the middle of the fourteenth century after the battle of Poitiers. They committed great devastations and outrages, particularly in the northeast of France. They were at length quelled by Captal de Buch and Gaston Phébus, count of Fois. The term *Jacquerie* is derived from *Jacques Bonhomme*, a familiar epithet for a peasant.

Jactitation of Marriage, in the common law, a boasting or giving out by a party that he or she is married to another, whereby a common reputation of their marriage may follow.

Jade, or Jahde (yä'de), a small strip of coast territory belonging to the Prussian province of Hanover, but locally in the grand-duchy of Oldenburg, at the entrance of Jade Bay. It was acquired by the Prussian government for the purpose of constructing a naval port and shipyard, and here has grown up Wilhelmshaven (which see).

Jade (jād), an ornamental stone, also called nephrite, a native silicate of calcium and magnesium, usually of a color more or less green, of a resinous or oily aspect when polished, hard and very tenacious. It has been used by rude nations for their weapons and implements, and has been and is highly prized for making carved ornaments in China, New Zealand, and among the native races of Mexico and Peru. Jade celts or axes are common among uncivilized races, and prehistoric specimens have been found in Europe, though the stone itself is not found there. A similar stone, more properly called *jadeite*, is frequently confounded with jade proper. It is a silicate of aluminum and sodium.

Jaen (*hä*-ān'), a picturesque town of Andalusia, Spain, capital of the province of Jaen, on the Jaen, a tributary of the Guadalquivir, 122 miles E. N. E. of Seville. It is the seat of a bishop, and has two cathedrals. Pop. 26,434.

Jaffa (jaf'fa; anciently *Joppa*), a maritime town in Palestine, 31 miles northwest of Jerusalem, picturesquely situated upon an eminence, the port of Nablus and Jerusalem, with which latter it is connected by railway. It exports oranges (an excellent variety), soap, grain, sesame, olive oil, etc. Pop. above 20,000.

Jaffna (jäf'na), or JAFNAPATAM, a town in Ceylon, at the northern extremity of the island, originally a Dutch settlement, and still thoroughly Dutch in its architecture and aspect. Most of the inhabitants are Tamils and Moors. Pop. (1911) 40,539.

Jagannâtha (*jag*-*an*-*nät'* *ha*; Skr. 'Lord of the World'), often written *Juggernaut*, the name given to the Indian god Krishna, the eighth incarnation of Vishnu, and to a very celebrated idol of this deity in a temple specially dedicated to Jagannâtha at Puri, a town in Orissa, on the Bay of Bengal. It is a very rudely-cut wooden image, having the body red, the face black, and the arms gilt; the mouth is open and blood-red; the eyes are formed of precious stones. It is covered with magnificent vestments and seated upon a throne between two others—his brother Bala-Rama and his sister Subhadra, colored respectively white and black. Great numbers of pilgrims, sometimes a hundred thousand, at the time of the festivals of Jagannâtha, assemble from all quarters of India to pay their devotions at his shrine. On these occasions the idol is mounted on a huge car resting on sixteen wheels, which is drawn by the pilgrims; and it has been stated and credited that formerly great numbers of the congregated people were wont to throw themselves under the wheels, and were thus crushed to death, the victims believing that by suffering this sort of death they would be immediately conveyed to heaven. This statement, however, is no longer accepted, it being now claimed that 'the rare deaths at the car festival were almost always accidental.'

Jägerndorf (yā'gérn-dorf), a town of Austria, in Silesia, on the Oppa, 13 miles northwest of Troppau. It is walled, has a handsome church, a ducal palace, and manufactures of woolens, etc. Pop. 14,675.

Jaggery (jag'éri), a coarse brown sugar made in the East Indies by the evaporation of the juice of several species of palms. It is chemically the same as cane-sugar.

Jaghire (jag'hēr), in Hindustan, a term closely corresponding to the fief of mediæval Europe. It is an assignment of the government share of the produce of a portion of land to an individual, either personal or for the support of a public e ablishment.

Jago, ST., several cities, islands, etc. See *Santiago*.

Jaguar (ja-gwär), *Felis onca*, the American tiger, a carnivorous animal of South and Central America, sometimes equalling a tiger in size, of a

Jaguar (*Felis onca*).

yellowish or fawn color, marked with large dark spots and rings, the latter with a dark spot in the center of each. It rarely attacks man unless hard pressed by hunger or driven to bay. The skin is valuable, and the animal is hunted by the South Americans in various ways.

Jahde. See *Jade* (Prussian territory).

Jahn (yän), OTTO, a German philologist and archæologist; born in 1813; died in 1869. He studied at Kiel, Leipzig and Berlin, traveled in France and Italy, on his return qualified himself for university teaching, became professor extraordinary of archæology and philology at

Greifswald in 1842, and full professor in 1845. In 1847 he was called to a similar chair in Leipsig, but lost this post in 1851 for his political action. In 1855 he was called to Bonn as professor of antiquities and director of the art museum. His writings on classical art and antiquities were very numerous; he also edited works of Greek and Latin authors, and published valuable contributions to the history of German literature, as also on various musical subjects.

Jail, or GAOL (jāl), a prison or place of legal confinement. See *Prison.*

Jail Fever, a dangerous disease once very prevalent in prisons, and which is now considered to be merely a severe form of typhus fever (which see).

Jainas (jī'nas), or JAINS, a Hindu religious sect, which, from the wealth and influence of its members, forms an important division of the Indian population. The sect was very numerous and important in the eighth and ninth centuries of the Christian era, and they have left many monuments of their skill and power in the fine temples built in different parts of the country. Jainism was an offshoot of Buddhism, with which it has many leading doctrines in common, but is distinguished from it by its recognition of a divine personal ruler of all, and by its political leanings towards Brahmanism. The Jains reverence certain holy mortals, who have acquired by self-denial and mortification a station superior to that of the gods; and they manifest extreme tenderness for animal life.

Jaintia Hills (jīn'ti-a), a collection of hills in Assam, giving name to a district of about 2000 square miles, with 56,000 inhabitants.

Jaipur (jī-pōr'), or JEYPORE, a state in Rajputāna, Hindustan, governed by a maharajah, under the political superintendence of the Eastern States Agency; area, 15,579 sq. miles. The soil, except in the southeast, is mostly sandy; the surface of the country is diversified by hill ranges. Corn, cotton, tobacco, opium and sugar-cane are extensively raised. There are manufactures of enamel work on gold, of woolen cloth, etc. Pop. 2,658,666.—The capital, JAIPUR, one of the finest of modern Hindu cities, has regular streets, with large, handsome houses. There is a college, a school of arts, an industrial museum, a hospital, fine gardens and several beautiful temples. Pop. (1910) 137,098.

Jaisalmer (jī-sal-mär'), or JEYSULMEER, a state of India in Rajputāna, under the political superintendence of the Central India Agency; area, 16,447 square miles. It is mostly a sandy desert with sparsely scattered villages. Water is scarce, the wells going down to a depth of 490 feet in some cases. The climate is dry and healthy. Pop. 73,370.—JAISALMER, the capital, is situated on a rocky ridge. The palace, the Jain temples in the fort, and the houses of the wealthy are remarkable for exquisite stone-carving. Pop. 7137.

Jājpur, JAJPORE (jaj'pōr), a town of Hindustan, on the Baitarani, in Cuttack district, Bengal. It is held in considerable sanctity among the Brahmans, who celebrate an annual fair in honor of the 'Goddess of the Waters' of Hindu mythology. Pop. 12,111.

Jalalabad (ja-lä-lä-bad'). See *Jelalabad.*

Jalalpur (ja-läl'pōr), a town of Hindustan, in Gujrat district, Punjab, with a government school and a shawl manufacture. Pop. 12,839.

Jalandhar (jal-an-dhar'), or JULLUNDUR, a town of Hindustan, headquarters of district of same name, in the Punjab; with a good trade, military cantonment, excellent American Presbyterian mission school, etc. Pop. 67,735.—The district, a fertile tract between the Sutlej and the Beas, has an area of 1,332 sq. miles, a pop. of 917,587. A division or commissionership has also this name; area 19,400 sq. miles; pop. 4,306,662.

Jalap (jal'ap; so called from *Jalapa,* in Mexico, whence it is imported), the name given to the tuberous roots of several plants of the nat. order Convolvulaceæ, that of *Ipomœa purga* being the most important. This is a

Jalap Plant (*Ipomœa purga*).

twining herbaceous plant, with cordate-acuminate, sharply auricled leaves, and elegant salver-shaped deep pink flowers, growing naturally on the eastern declivities of the Mexican Andes, at an elevation of from 5000 to 8000 feet. The jalap of commerce consists of irregu-

lar ovoid dark-brown roots, varying from the size of an egg to that of a hazel-nut, but occasionally as large as a man's fist. The drug jalap is one of the most common purgatives, but is apt to gripe and nauseate. It has little smell or taste, but produces a slight degree of pungency in the mouth.

Jalapa, or XALAPA (hä-lä'pä), a city of Mexico in the department of and 52 miles northwest of Vera Cruz. It is the residence of the wealthiest merchants of Vera Cruz, and enjoys a fine climate. The *jalap* root is found abundantly here. Pop. (1910) 34,816.

Jalaun (ja-loun'), a town in a district of the same name, in the N. W. Provinces of India, 110 miles S. E. of Agra, in a swampy and unhealthy locality. Pop. 8573.—The district consists of a plain west of the Jumna; area, 1469 sq. miles; pop. 399,726.

Jalesar (jal-ä-sur'), a town of Hindustan, in Etah district, N. W. Provinces. Pop. 15,600.

Jalisco (hä-lis'kō), or GUADALAJARA, a State of Mexico, bounded on the west by the Pacific. It is chiefly mountainous, but well watered and wooded, and the climate is healthy. The soil is fertile, and wheat and barley are abundantly produced. The capital is Guadalajara. Pop. 1,153,891.

Jalpaiguri (jal-pī-gu'rē), a town of Hindustan, headquarters of district of same name, in Bengal, on the Teesta; pop. 9708.—The district lies south of Bhutan and north of Kuch Behar; area 2962 sq. miles; pop. 787,380.

Jamaica (jä-mä'kä), one of the West India Islands, 80 or 90 miles S. of Cuba, the third in extent of the islands, and the most valuable of those belonging to the British; 146 miles in length east to west, and 49 miles broad at the widest part; area, 4256 square miles. It is divided politically into three counties—Cornwall, Middlesex and Surrey; its capital is Kingston. The island as a whole is very beautiful, and much of it is fertile. The coast is indented with a number of good harbors, of which Port Royal or the harbor of Kingston is the most considerable. The interior is traversed by lofty mountains in all directions; the principal chain, called the Blue Mountains, reaching the height of 7270 feet. The declivities are steep, and covered with stately forests. Jamaica is well watered, having numerous rivers and springs. Earthquakes of a violent character have been frequent. The climate in the districts along the coast is, in most places, exceedingly hot, but is not on the whole unhealthy; on the high lands the air is temperate and pure, while even on the low grounds the heat is greatly moderated by the cool sea-breezes which set in every morning. There are two rainy and two dry seasons. Native trees include the ballata, rosewood, satinwood, mahogany, lignum vitæ, lancewood, ebony, Jamaica cedar, silk cotton tree, bamboo, coffee, cocoa, and several species of palm. The common vegetables grow in the hills and the plains produce plantains, yams, cassava, ochre, beans, pease, ginger and arrowroot. The principal fruits are orange, grapefruit, lime, grapes, pineapple, mango, banana, melons, avocado pear, breadfruit and tamarind. Of flowering plants there are over 2000 distinct species, and of ferns 450 species. The largeness of these numbers may be to some extent accounted for by differences of altitude, temperature and humidity. Some of the flowers are very beautiful. Domestic fowls thrive well, and cattle raising has become profitable. Fruit, sugar, rum, coffee, dye-woods, and pimento form the chief exports, more than half of which go to the United States; foodstuffs, coal, clothing and other manufactured goods the chief imports. The government is vested in the governor, assisted by a privy council, and a legislative council composed of fifteen members, nine elected, the others nominated or *ex-officio*. The English Church is presided over by a bishop, assisted by a regular staff of parochial clergy. The Baptists, Methodists, Presbyterians and other Protestant bodies are well represented, and there is a considerable number of Roman Catholics and Jews. Education is not compulsory, and the percentage of illiteracy is very high Population, 831,000, of whom less than 16,000 are white. Kingston, the capital, has a population of 57,000. Other towns are Spanish Town (pop. 7200), Port Antonio (pop. 7000), and Montego Bay (pop. 6000).

Jamaica was discovered by Columbus in 1494, in his second expedition to the New World. In half a century the cruelty of the Spanish conquerors exterminated the natives. The island was taken by Cromwell in 1655, and ceded to England by the treaty of Madrid in 1670. Since the abolition of slavery the prosperity of Jamaica has greatly decreased. Of late many Chinese and coolies have been employed in agriculture. In 1865 a serious revolt broke out among the blacks at Morant Bay, and was put down with considerable severity by Governor Eyre. Since that time signs of disaffection have disappeared, and a greater state of com-

fort is said to prevail among the inhabitants generally. Politically dependent on Jamaica are the Cayman Islands, and the Turks and Caicos Islands.

Jamaica, a former village of the State of New York, now included in the borough of Queens, New York City.

Jamalpur (ja-mäl-pōr'), a town of Hindustan, in Monghyr district, Bengal, with large workshops belonging to the East India Railway Co. Pop. about 15,000.—Also a town in Maimansingh district, Bengal, on the Brahmaputra. Pop. 14,727.

James, St., called the *Greater*, the son of Zebedee and the brother of John the Evangelist. Christ gave the brothers the name of Boanerges, or *sons of thunder*. They witnessed the transfiguration, the restoration to life of Jairus' daughter, the agony in the garden of Gethsemane, and the ascension. St. James was the first of the apostles who suffered martyrdom, having been slain by Herod Agrippa A.D. 44. There is a tradition that he went to Spain, of which country he is the tutelary saint.

James, St., called the *Less*, the brother or cousin of our Lord, who appeared to him in particular after His resurrection. He is called in Scripture the *Just*, and is probably the apostle described as the son of Alphæus. He was the first bishop of Jerusalem, and in the first apostolic council spoke against those wishing to make the law of Moses binding upon Christians. The progress of Christianity under him alarmed the Jews greatly, and he was put to death by Ananus, the high priest about A.D. 62. He was the author of the epistle which bears his name.

James, St., of the Sword (*San Jago de la Espada*), a military order in Spain, instituted in 1170 by Ferdinand II, King of Castile and Leon, to stop the incursions of the Moors. The knights had to prove their noble descent for four generations.

James I, of Scotland, one of the Stuart kings, born in 1394, was the son of Robert III by Annabella Drummond. In 1405 his father wished him to be conveyed to France in order that he might escape the intrigues of his uncle, the Duke of Albany, but the vessel in which he was being conveyed was taken by an English squadron, and the prince was carried prisoner to London. Here he received an excellent education from Henry IV and, to relieve the tedium of captivity, he applied himself to those poetical and literary pursuits in which he afterwards so highly distinguished himself. Robert III died in 1406, but James was not allowed to return to his kingdom till 1424. Previous to his departure he married Joanna Beaufort, daughter of the Earl of Somerset, a lady of the blood royal of England. On his return to Scotland he caused the Duke of Albany and his son Murdoch to be executed as traitors, and proceeded to carry on vigorous reforms, and, above all, to improve his revenue and curb the ambition and lawlessness of the nobles. The nobility, exasperated by the decline of their authority, formed a plot against his life, and assassinated him at Perth in 1437. Besides his poem, *The King's Quhair* (or Book), by which he ranks high among romantic poets, two humorous poems, excellent, though coarse, are often ascribed to him—*Christ's Kirk on the Green* and *Peblis to the Play*.

James II, King of Scotland, son of James I, was only seven years of age when his father was assassinated in 1437. During his minority the kingdom was distracted by struggles for power between his tutors, Livingston and Crichton, and the great house of Douglas. In 1449 he married Mary of Guelderland. He later allied himself with the Douglases, but being deprived of all real power, he resolved to free himself from the galling yoke. This he did in 1452 by inducing the Earl of Douglas to come to Stirling Castle, where he stabbed him with his own hand. He then quelled a powerful insurrection headed by the next earl, whose lands were confiscated. In 1460 he infringed a truce with England by besieging the castle of Roxburgh, and was killed by the bursting of a cannon in the 29th year of his age.

James III, King of Scotland, son of James II, was born in 1453. The kingdom during his minority was governed in turn by Bishop Kennedy and the Boyd family. During his life James was controlled by favorites. Prominent among these was Cochran, a mason, through whom one brother of James was obliged to flee the kingdom, and another was put to death. The nobles seized Cochran and five others and hanged them. A plot was subsequently formed to dethrone the king, and though many peers remained loyal to him the royal army was defeated at Sauchie, near Stirling, in 1488, the king's son being on the side of the victorious nobles. James escaped from the field, but was murdered during his flight.

James IV, King of Scotland, born in 1472, son of James III, was in his sixteenth year when he sur-

ceeded to the throne, having been voluntarily or by compulsion on the side of the nobles who rebelled against his father. During his reign the ancient enmity between the king and the nobility seems to have ceased. His frankness, bravery, skill in manly exercises and handsome person won the people's hearts, and he ruled with vigor, administered justice with impartiality, and passed excellent laws. Henry VII, then king of England, tried to obtain a union with Scotland by politic measures, and in 1503 James married his daughter, Margaret. A period of peace and prosperity followed. French influence, however, and the discourtesy of Henry VIII in retaining the jewels of his sister and in encouraging the border chieftains hostile to Scotland, led to angry negotiations, which ended in war. James invaded England with a large force, and himself and many of his nobles perished at Flodden Field in 1513.

James V, of Scotland, born in 1512, succeeded in 1513, at the death of his father, James IV, though only eighteen months old. His mother, Margaret of England, governed during his childhood but the period of his long minority was one of lawlessness and gross misgovernment. James assumed the reins of government in his 17th year. He married Magdalen, daughter of Francis I of France, and on her death Mary of Lorraine, daughter of the Duke of Guise. Henry VIII, having broken with Rome, and eager to gain over his nephew to his views, proposed an interview at York; but James never came, and this neglect enraged Henry. A rupture took place between the two kingdoms, but James was ill supported by his people, and the disgraceful rout of his troops at Solway Moss broke his heart. He died in 1542, seven days after the birth of his unfortunate daughter, Mary.

James I, of England and VI of Scotland, the only son of Mary, Queen of Scotland, by her cousin Henry, Lord Darnley, was born at Edinburgh Castle in 1566. In 1567 (his mother being forced to resign the crown) he was crowned at Stirling, and his childhood was passed under the direction of the Earl of Mar, and the tuition of the famous Buchanan. He had much trouble with his nobles, a party of whom made him captive at Ruthven Castle in 1582; but a counter party soon set him at liberty. When his mother's life was in danger he exerted himself in her behalf (1587); but her execution took place, and he did not venture upon war. In 1589 he married Princess Anne of Denmark. In 1603 he succeeded to the crown of England, on the death of Elizabeth, and proceeded to London. One of the early events of his reign was the Gunpowder Plot (q. v.). He soon allowed his lofty notions of divine right to become known, got into trouble with Parliament, and afterwards endeavored to rule as an absolute monarch, levying taxes and demanding loans in an arbitrary manner. In 1606 he established Episcopacy in Scotland. In 1613 his daughter Elizabeth was married to the elector Palatine, an alliance which ultimately brought the present royal family to the throne. He wished to marry his son Charles, Prince of Wales, to a Spanish princess, but this project failed, and war was declared against Spain. The king, however, died soon after, in 1625. James, though possessed of good abilities and a good heart, had many defects as a ruler, prominent among them being subservience to unworthy favorites and disregard for the kingly dignity. He was also vain, pedantic, and gross in his taste and habits. His name is sullied by the part he played in bringing Raleigh to the block. In his reign the authorized translation of the Bible was executed.

James II, of England, second son of Charles I and of Henrietta Maria of France, was born in 1633, and immediately declared Duke of York. During the civil war he escaped from England and served with distinction in the French army under Turenne, and in the Spanish army under Condé. At the Restoration, in 1660, he got the command of the fleet as lord high-admiral. He had previously married Anne, daughter of Chancellor Hyde, afterwards Lord Clarendon. In 1671 she died, leaving two daughters, who became successively queens of England. Having openly avowed the Roman Catholic faith, on the Test Act being passed to prevent Roman Catholics from holding public employments he was obliged to resign his command. He was afterwards sent to Scotland as lord high commissioner, where he persecuted the Covenanters. He succeeded his brother as king in 1685, and at once set himself to attain absolute power. A rebellion headed by the Duke of Monmouth (his nephew) was easily put down, and this encouraged the king in his arbitrary measures. He even accepted a pension from Louis XIV that he might more readily effect his purposes, especially that of restoring the Roman Catholic religion. The result of this course of action was the revolution of 1688 (see *England*), and the arrival of William, Prince of Orange. Soon James found himself completely deserted, and having quitted the country he

repaired to France, where he was received with great kindness and hospitality by Louis XIV. Assisted by Louis, he was enabled in 1689 to attempt the recovery of Ireland; but the battle of the Boyne, fought in 1690, compelled him to return to France. He died in 1701.

James III, THE PRETENDER. See *Stuart (James Edward Francis)*.

James, GEORGE PAYNE RAINSFORD, an English novelist, born in London in 1801. While still very young he manifested a considerable turn for literary composition, and produced, in 1822, a *Life of Edward the Black Prince*. Some years afterwards he composed his first novel, *Richelieu*, which was shown in manuscript to Sir Walter Scott, and published in 1829. Its success determined him towards fiction, and a series of novels, above sixty in number, followed from his pen in rapid succession, besides several historical and other works. Among them may be mentioned *Darnley, De L'Orme, Lord Montague's Page, Philip Augustus, Henry Masterton, Mary of Burgundy, The Gipsy, History of Chivalry, Life of Charlemagne*, etc. He accepted the office of British consul, first at Richmond, Virginia, and afterwards at Venice, where he died in 1860.

James, HENRY (1843-1916), an American novelist, born in New York, educated chiefly in France and Switzerland, and at Harvard Law School. He began literary work as a contributor to magazines and soon commanded an ever-growing audience by his keen psychological analysis of human nature, his wealth of vocabulary and his fine literary finish. He traveled extensively, and spent a great deal of his time in Europe. When the great European war broke out, in 1914, he was unable to understand why the United States did not instantly side with the Allies against Germany; his sympathies were so strongly with Great Britain that he renounced allegiance to America and in 1915 became a British subject. His first novel, *Watch and Ward*, was published in 1871. This was followed by two other books that were widely acclaimed. In 1875 he published his *Transatlantic Sketches;* and two years later he wrote *The American*, which has taken rank as a public favorite with *The Bostonians*, published in 1886, *The Sacred Fount* (1901), *The Ambassador* (1903), and *The Golden Bowl* (1905). His publications include *A Passionate Pilgrim, Roderick Hudson, French Poets and Novelists, The Europeans, Daisy Miller, An International Episode, Life of Hawthorne, A Bundle of Letters, Confidence, Diary of a Man of Fifty, Washington Square, The Portrait of a Lady, Terminations, What Maisie Knew, The Outcry, The Small Boy and Others*. His novels and tales depended for their interest on the portrayal of character rather than on incident. In his later years his style became involved and intricate, losing much of its early charm through ultra-refinement.

James, WILLIAM, psychologist, brother of the above, was born in New York in 1842. After 1872 he was connected with Harvard in professorships of psychology and philosophy, and won eminence in his special field. His *Principles of Psychology* is highly esteemed, and he wrote various other works of value, one of the latest being *Pragmatism—A New Name for Some Old Ways of Thinking*. In his later years he became a convert to spiritualism. He died in 1910.

Jameson (jā'me-son), SIR LEANDER STARR, British physician and colonial administrator, popularly known as 'Dr. Jim,' was born in Edinburgh in 1853 and was educated for the medical profession at University College Hospital, London. In 1878 he went to South Africa, where he practiced medicine, numbering Oom Paul Kruger and other distinguished South Africans among his patients. He became boon companion of Cecil Rhodes and schemed for the enlargement of British influence. One of his schemes took the form of a military raid in the Transvaal in 1895 in support of a projected uprising in Johannesburg connived at by Rhodes. He was captured, but instead of executing him President Kruger handed him over to England for punishment. He was imprisoned, but returned to South Africa and became premier of Cape Colony. Died Nov. 26, 1917.

James River, a river of Virginia, which passes the towns of Lynchburg and Richmond, and communicates, through Hampton Roads and the mouth of the Chesapeake Bay, with the Atlantic. Its general course is south of east, and its length is 450 miles. The first English settlement in America was formed at Jamestown, 32 miles from the mouth of this river, in 1607.

James' Bay, the southern extension of Hudson Bay, called from Captain James, who wintered here in 1631-32 while trying to find the N. W. passage. Within it there are numerous rocks and islands, and its navigation is dangerous.

James' Powder, a medicine in which antimony is the most important ingredient.

Jamestown (jāms'town), the site of the first British settlement in the United States. Its locality was on the James River, Virginia, about 32 miles above its mouth. It was burned in the Bacon rebellion of 1676 and only a few ruins remain, including the old church tower. It gave the name to an exposition held near Norfolk in 1907, the three-hundredth anniversary of its settlement.

Jamestown, a city and summer resort of Chautauqua county, New York, on the outlet of Chautauqua Lake, which supplies water-power for several mills. It has extensive manufactures of textiles, furniture, stained glass, saws, iron goods, knitted and worsted fabrics, etc. Pop. 31,297.

Jamieson (jā'mē-son), JOHN, a Scotch philologist and theologian, was born at Glasgow in 1759, educated for the ministry among the Antiburgher Seceders, and after having been settled for a time in Forfar, removed in 1797 to Edinburgh, where he spent the remainder of his life, and died in 1838. The work by which he is chiefly known is his *Etymological Dictionary of the Scottish Language* (1808-09); supplement (1825), which is highly valuable as an extensive collection of Scotch words, phrases and customs.

Jammu (jum-mö'), JAMU, or JUMMOO, a portion of Cashmere (which see).

Jamna. See *Jumna.*

Jamnotri (jum-nö'trē), or JUMNOUTRI, a celebrated place of pilgrimage in Hindustan, in the province of Garhwal, 185 miles N. N. E. of Delhi, at the source of the Jumna, with hot springs 10,849 feet above sea-level.

Jamuna (ja-mu-nä'), the name of several rivers of Northern India, the chief being the lower section of the Brahmaputra, and that which connects it directly with the Ganges.

Janauschek (jan'ō-shek), FRANCESCA R. M., an eminent actress, born at Prague, Bohemia, in 1830; died in 1904. She gained a high standing as a tragedienne, playing in Germany, England and the United States, and dwelling in the latter country in her later life. She rendered acceptably in English the most exacting roles in Shakesperean tragedy.

Janesville (jāns'vil), a city, capital of Rock county, Wisconsin, on both sides of Rock River, with active trade and manufactures, including large cotton factories, woolen and flour mills, agricultural implements, carriages, furniture, etc. Here is the State School for the Blind. Pop. 13,894.

Janin (zhä-nan), JULES GABRIEL, French critic, and author of a number of novels and other works, was born in 1804, and died in 1874. He devoted himself to journalism at an early period, and from 1830 till his death he was connected with the *Journal des Débats.* In 1870 he was made a member of the French Academy. His first novel, *L'Ane Mort et la Femme Guillotinée,* appeared in 1829, and was quickly followed by the *Confession; Barnave,* a political novel; *Contes Fantastiques; Contes Nouveaux.* Among other works of his are *Voyage en Italie; Histoire de la Littérature Dramatique; Béranger et son Temps;* etc.

Janina (yä'nē-na), a town of northwestern Greece, on lake of same name, 200 miles N. W. Athens. Formerly a villayet in the Turkish empire, it was ceded to Greece in 1913 at the close of the Balkan war (q. v.). It was the stronghold of Ali Pasha (q. v.), 'the Lion of Janina,' 1788-1822. The fortress and splendid seraglio, built on a promontory jutting down into the lake, are now in ruins. Pop. 22,000.

Janizaries (jan'i-za-rēz; Turkish, *Jeni-tcheri,* new soldiers), an Ottoman infantry force, somewhat analogous to the Roman prætorians, part of them forming the guard of the sultan. They were originally organized about 1330, and subsequently obtained special privileges, which in time became dangerously great. The regular janizaries once amounted to 60,000, but their numbers were afterwards reduced to 25,000. The irregular troops amounted to 300,000 or 400,000. Their power became so dangerous and their insurrections so frequent that several unsuccessful attempts were made to reform or disband them. At various times sultans had been deposed, insulted, and murdered by the insurgent janizaries. At last, in June, 1826, they rebelled on account of a proposal to form a new militia, when the sultan, Mahmoud II, having displayed the flag of the Prophet, and being supported by their aga or commander-in-chief, defeated the rebels and burned their barracks, when 8000 of them perished in the flames. The corps was abolished, and a curse laid upon the name. As many as 15,000 were executed, and fully 20,000 were banished. The Nizam, a corps of troops under modern organization, took their place.

Jan-Mayen (yän-mī'en), a small volcanic island in the Arctic Ocean, 150 miles from the coast

of East Greenland. In Beerenberg, an extinct volcano, it rises to the height of 6870 feet. The island was discovered in 1611 by the Dutch navigator Jan Mayen, and was used as an Austrian polar station for scientific observations in 1882-83.

Jansen (yän'sen), Cornelius, usually known as *Jansenius*. See *Jansenius*.

Jansenists (jan'sen-ists), Jan'sen-ism, the sect or party and its doctrines, which owed their origin to the teaching of Jansenius (which see). In his great work *Augustinus*, published in 1640, Jansenius maintained the Augustinian doctrine of free grace, and recommended it as the true orthodox belief, in opposition to the semi-Pelagianism of the Molinists. The book was condemned by Urban VIII in 1642, in the bull *In Eminenti;* but its doctrines were supported by many distinguished French and other theologians, and the scholars of the Port Royal, namely, Nicole, Pascal, and Antoine Arnauld, undertook the defense of Jansenism. Another bull, in which the pope (1653) particularly condemned five propositions from the *Augustinus*, also met with a strong opposition. In 1656 Alexander VII issued a special bull by which the Jansenists were required either to recant or secede from the Roman Catholic Church. It was found impossible to force them to an unconditional subscription of this bull; and in 1668 an agreement with Clement IX, by which a conditional subscription was permitted, obtained for them a temporary repose. The party stood its ground under the protection of Innocent XI (died in 1689), who tolerated them as much as Louis XIV and the Jesuits opposed them. Father Quesnel's *Moral Reflections on the New Testament*—the most universally read book of this period—gave it new support, but also led to the bull *Unigenitus* (in 1713), which condemned 101 propositions from the *Reflections*. This bull excited much indignation in France, and was strongly resisted; but the Jansenists were rigorously censured unless they accepted the bull unconditionally. In consequence great numbers emigrated to the Netherlands, and their power as a party rapidly declined. This was hastened from 1731 by the fanatical excesses of many Jansenists, especially of the Convulsionists (which see) and others, which encouraged ridicule, favored repressive measures, and ultimately extinguished the Jansenists as a party in France. As a sect, they still survive in the Netherlands. They call themselves, by preference, the *disciples of St. Augustine*. Each bishop on his appointment notifies his election to the pope, and craves confirmation. The non-acceptance of the bull *Unigenitus*, however, has caused all their advances to be rejected, and as they have rejected the doctrine of the immaculate conception and the decrees of the Vatican Council, they stand further apart than ever from the orthodox Catholic Church, though between them and the Old Catholics there are friendly relations.

Jansenius (yän-sä'ne-us), Cornelius, (properly Cornelisz Jansen), a Dutch theologian. He studied at Utrecht, Louvain and Paris; secured a professorship at Bayonne; returned to Louvain in 1617, where he obtained the degree of doctor, and took a prominent part in the affairs of the university. He was appointed professor of Scripture in 1630, and was promoted to the bishopric of Ypres in 1636. In this city he died of the plague in 1638, leaving an unblemished reputation for piety and purity of morals. He had just completed his great work, the *Augustinus*, a book which gave rise to a great religious controversy. See *Jansenists*.

Janssens (jäns'sens), Abraham, a Dutch historical painter, born about 1569; died about 1632. He was the contemporary and rival of Rubens, though the place which he occupies beside him is very subordinate. He is chiefly admired for his coloring and accuracy of design, his most important works being Scriptural scenes. Many of his pictures are in the Flemish churches, while others are in the galleries of Munich, Vienna, Berlin and Dresden.

Januarius (jan-u-ä'ri-us), St., Bishop of Benevento, was beheaded at Puzzuoli in the beginning of the fourth century, a martyr to the Christian faith, and is honored as the patron saint of the people of Naples, where his body lies buried in the crypt of the cathedral. His head and two vials of his blood are preserved in a separate chapel. These vials are brought near the head of the saint on three festivals each year, notably September 19, the anniversary of the martyrdom. On these occasions, if the blood becomes of a clear red color and moves briskly in the vial, the patron saint is said to be propitious, but by remaining congealed it betokens disaster.

January (jan'u-a-ri), the first month of the year, consisting of 31 days. It was by the Romans held sacred to Janus, from whom the name was derived. The Roman year originally began with March, and consisted of only

ten months. Numa is said to have added January and February. See *Calendar*.

Janus (jā'nus), an ancient Latin divinity, after whom the first month of the year was named. He was held in great reverence by the Romans, and was represented with two faces, one looking forward, the other backward. All doors, passages and beginnings were under his care. His principal festival was New Year's Day, when people gave each other presents. The temple of Janus, which was open in time of war and closed in time of peace, was shut only three times in the long space of 700 years—once in the reign of Numa, again after the first Punic war, and the third time under the reign of Augustus A.U.C. 744. Vespasian also closed it in A.D. 71.

Janvier (jan'vēr), THOMAS A., author, born at Philadelphia, 1849. He did editorial work on several Philadelphian newspapers, resided for a number of years in Mexico, and made it the scene of several works, as *The Aztec Treasure House, Stories of Old New Spain, Legends of the City of Mexico*, etc. He wrote also *The Uncle of an Angel, In Old New York, The Passing of Thomas, The Dutch Founding of New York*, and various other works. He died in 1913. His sister ('Margaret Vandegrift') wrote a number of juvenile stories and verses, etc.

Japan (jā-pan'), an island empire in the North Pacific Ocean, lying off the east coast of Asia. It comprises four large mountainous and volcanic islands, viz., Hondo, Kiushiu or Kiusiu, Shikoku or Sikok and Yesso, besides many other islands and islets, and in particular the Loo-Choo or Riu-kiu and the Kurile groups. The largest island, Hondo or Niphon, is 800 miles long, and from 50 to 100 miles broad. By the Japanese Niphon or Nipon is employed to describe the whole empire. The name 'Jipun,' altered to Japan, is the Chinese designation, and it first became familiar to Europeans. The official return gives Japan an area of 147,655 square miles and a pop. (1910), of 59,751,919.

Physical Features.—The Japanese islands form part of the line of volcanic action commencing with the Aleutian Isles and terminating in the islands of Southeastern Asia. The coasts of the larger islands are extremely irregular, being deeply indented with gulfs, bays and inlets, which form magnificent harbors. The surface also is generally uneven, and in many instances rises into mountains of great elevation. The island of Hondo is traversed throughout its whole length by a chain of mountains, the highest peak being Fuji-yama (12,500 feet), a dormant volcano covered with perpetual snow. The volcanic vents are numerous in Yesso, Hondo and Kiusiu, and earthquakes are frequent. The minerals comprise copper, lead, iron, antimony and sulphur; gold and silver are found, though not to a great extent. Coal is mined in various parts. The rivers are of no great length: Tonegawa, the longest, is only about 172 miles. Biwa, in the south of Hondo, is the principal lake, being some 50 miles in length, with an extreme breadth of 20 miles. The harbors most frequented by foreigners are the treaty ports of Yokohama, Hiogo (or Kobé), Nagasaki, Hakodate, Niigata and Osaka.

Climate.—The climate ranges from an almost Arctic cold in the north to a nearly tropical heat in the south. In the island of Yesso winter begins about October and continues to April, its course being marked by severe frosts and snow-storms; while in Yokohama, again, the winter is genial, with a bright sky, and a temperature much like England. From July to September the thermometer often ranges as high as 95° in the shade.

Products.—The vegetation of Japan is very varied, in consequence of its wide range of temperature. Rice of excellent quality, as also wheat, barley, sugar-cane and millet are largely grown; while ginger, pepper, cotton and tobacco are cultivated in considerable quantities. Tea and raw silk are largely produced. The Japanese are skilful gardeners, and the fruits raised include strawberries, melons, plums, persimmons, figs, loquats and oranges. Of flowers and flowering shrubs the camellia, azalea, hydrangea, lilies, peonies, the chrysanthemum, daphne and wistaria are indigenous. The forests are extensive; in the south the palm, banana and bamboo flourish; while in the north, cedar, pine, maple, and the *kadsi* or paper-tree are abundant. The chief domestic animals are the horse, which is small and hardy; the ox, which is used as a beast of burden; the dog, which is held sacred; and the cat, which is of a short-tailed species. Rabbits and guinea-pigs are household pets. Bantam fowls, chickens, ducks and pigeons are reared for food. Of the wild animals, deer are numerous in the north, bears are to be found in Yesso, while boar, wolves, badgers, foxes, monkeys and hares are not uncommon. Birds are plentiful; falcons, pheasants, ducks, geese, teal, storks, pigeons, ravens, larks, pelicans, cranes, herons, etc. Fish is one of the chief foods, the principal varieties being salmon, cod, herring, sole and mullet. There are also tortoises, lizards,

scorpions and centipedes; and of the insect tribes there are white-ants, winged grasshoppers, and several beautiful varieties of moths.

People.—The Japanese may be regarded as belonging to the great Mongolian family, though ethnologists recognise more than one element in the population. They are generally distinguished by broad skulls and high cheek-bones; small, black eyes, obliquely set; long, black

Japanese Work-people.

hair, and a yellow, or light-olive complexion; some are good looking, and many are well made, active and nimble. They are a frugal, skilful, persevering, courageous race, who combine these characteristics with much frankness, good humor and courtesy. A Japanese gentleman's dress is a loose garment made of silk, gathered in at the waist by a girdle, and extending from neck to ankle; while over this is thrown a wide-sleeved jacket. In the country a short cotton gown is worn, while the lower classes generally wear scant clothing. The hair is shaved off the front part of the head, while on the back and sides it is gathered up into a knot and fastened with long pins. As regards both clothing and hair-dressing the women very much resemble the men. They also paint and powder themselves to excess. Polygamy is not practised, but a husband can have as many concubines as he can afford. The Japanese are a holiday-loving people, and delight in the theater. Their two principal religions are Buddhism and Shintoism. The chief observances of Shintoism are ancestral worship and sacrifice to departed heroes. Buddhism is the popular religion. A considerable number of Christian missionaries are now actively engaged in the country. The Japanese language is dual in its nature. Originally a polysyllabic Mongolian tongue, it has been greatly enriched by the addition of many Chinese words, the latter being much used by the literary and governmental classes. The literature of Japan is extensive, and includes all departments—historical, scientific, biographical, but is especially copious in poetry and romance. Contact with Europe has affected literary production; European and not native writings are now mostly read.

Industries and Trade.—In native and imitative manufactures the Japanese are exceedingly ingenious. Their artistic treatment of copper, iron, bronze, silver and gold is of the finest, while in stone carvings, mosaics, wicker, tortoise-shell, crystal, leather, and especially in wood lacquer-work, they are skilful in the highest degree. Of textile fabrics they excel in cotton-goods, crapes, brocades, and especially in figured silk goods. Paper is largely made, and its uses—from a house to a handkerchief—are manifold. Japanese decorative art is remarkable for patient but facile treatment of bird, beast, and flower; the absence of perspective and chiaroscuro seems even to add to its effect. The modern art productions, however, have been debased by imitations of bad European work. The chief export is silk, tea coming next, while the imports are mostly textile fabrics, sugar machinery, etc. The standard money unit is the gold *yen* or dollar, divided into 100 *sens*. The coinage consists of gold, silver, and copper pieces, from the value of 20 *yens* to 1/10 *sen*. There is also a paper currency. The principal weight is the picul, equal to 133 lbs. avoirdupois.

Government, etc.—The government of Japan till recently was an absolute monarchy, but a new constitution was proclaimed in February, 1889, providing for the establishment of a house of peers, partly hereditary, partly elective, partly nominated by the emperor or mikado (as the ruler is called), and of a house of commons of 300 members, elected by all men 25 years of age, and paying taxes to the amount of 25 dollars annually. There is also a cabinet, which includes the prime minister and the statesmen at the head respectively of the foreign office, the treasury, war, navy, education, public works, religion, justice, and the imperial household. There are resident ministers in most European countries and in the United States. Railways are now used over a length of very near 5000 miles,

with about 18,000 miles of telegraph line, while the postal system throughout the empire is excellent. Education is compulsory, the school age being from the 6th to the 14th year. There is a university at Tokyo, with affiliated colleges. Conscription is the rule, and the army numbers 450,000 men in peace, with a war establishment of 1,500,000. The navy numbers about 150 vessels. The wars with China and Russia, demonstrated Japanese strategy in war, and gave a great impetus to the navy, which now has 11 modern battleships, first class in every sense, and a considerable number of older battleships and of cruisers.

History.—The Japanese profess to have an accurate chronology from 660 B.C., but little confidence can be placed in their annals previous to the tenth century after Christ. A long line of emperors or mikados reigned over Japan, but for some six hundred years all real power was in the hands of the *shogun* or chief minister. Japan was first made known to Europe by Marco Polo, under the title of Zipangu. In 1542 it was visited by Mendes Pinto, representing the Portuguese, and in 1549 the Jesuit missionary, St. Francis Xavier, arrived and converted many of the natives to the Church of Rome. From the overbearing character of the Portuguese traders on the one hand and the jealousy of the Japanese priests, fomented by sectarian troubles, an edict was issued excluding missionaries from the country, and in 1640 the Portuguese were finally expelled and the Christian converts largely massacred. The Dutch East India Company established a trading settlement in 1600, which for more than two centuries formed Japan's sole channel of intercourse with the external world. In 1854 a United States fleet, under Commodore Perry, succeeded in inducing the Japanese to abandon their policy of isolation and since then their country has been rapidly modernized. A treaty was made with the United States, and others soon after with several European nations. These treaties made by the Shogun led to a revolution in the island empire, which ended in victory for the mikado and his restoration to his ancient supremacy, the Shogunate being abolished. A complete change now took place. The Japanese rapidly became converted to western ideas, both political and social. In July, 1894, war was declared with China on the question of their respective claims to Corea. The Japanese successes brought it to a triumphant end in April, 1895. By the treaty of Shimonoseki the terms of peace included recognition of Corean independence, which had been the chief cause of the war, the cession to Japan of Formosa and some smaller islands, with the peninsula of Liao-Tung, including Port Arthur, a large war indemnity, and a very great relaxation of restrictions on foreign industry and commerce in China. The success of Japan was in part negatived by the action of Russia, France and Germany, which countries, by threats of war, forced her to return to China the Liao-Tung Peninsula, obtaining in return only a small increase in the indemnity. The subsequent action of Russia in extending the Trans-Siberian Railway to Port Arthur, leasing this port from China, and increasing her military force in Manchuria, led the Japanese government to insist on a withdrawal of these troops, and in 1904 brought on the Russo-Japanese war (which see). The success of Japan in this great conflict raised the island empire to the level of the leading powers of the world, a position which Japan is making every effort to hold by a rapid increase in her military and naval strength, an alliance with Great Britain, and a remarkable development in commerce and manufacture. Mutsuhito, the ruling mikado from 1867 to 1912, was succeeded by his son Yoshihito. At the outbreak of the European war in 1914, the Mikado 'advised' Germany to close the port of Kiao-chau and withdraw from the Pacific. This was not done and Japan declared war on Germany, and, after a three months' siege, captured Kiao-chau, Nov. 7, 1914. By the treaty of Versailles (see *Treaty*), June 28, 1919, Germany renounced in favor of Japan, all her rights in the Shantung province (see *Shantung*). Corea, which had been annexed by Japan, attempted to regain independence in 1919, but the movement was quashed.

Japanning (jà-pan'ing), the act of applying varnish to such articles as wood, metal, leather and *papier-maché*, in imitation of the lacquered work of Japan and China. The article to be japanned, being made thoroughly dry, is first brushed over with two or three coats of seed-lac varnish to form the *priming*. The next coat of varnish is mixed with the *ground tint* desired, and where a design is intended, it is now painted with colors. The whole is then covered with additional coats of varnish, which are dried and polished as applied. See *Lacquering*.

Japheth (jā'feth), one of the sons of Noah (Gen., ix, 24). His descendants, according to Gen., x, 5, peopled the isles of the Gentiles, and thus Japheth is often considered the ancestor of most European races.

Japura (hä-pö'rä), or Caquetá (kä-kä'tä), a large river of South America, an affluent of the Amazon. It has its sources in the mountains of Colombia and its whole length is upwards of 1000 miles, the last 350 being in Brazilian territory. The navigation is interrupted by a great cataract, which occurs in lat. 1° 10′ s.; lon. 72° 20′ w.

Jardine (jär'din), Sir William, a practical zoölogist of high and varied attainments, was born in Edinburgh in 1800, and died in 1874. He is best known as the editor of the celebrated *Naturalists' Library*. His chief works comprise a history of the *British Salmonidæ*, the *Ichnology of Annandale*, etc.

Jardinière (shär-dēn-yär), an ornamental stand for growing plants, used in decoration of an apartment.

Jargon (jär'gun), Jar'goon, a mineral, usually of a gray or greenish-white color, in small irregular grains, or crystallized in quadrangular prisms surmounted with pyramids, or in octahedrons consisting of double quadrangular prisms.

Jargonelle (jär-gu-nel'), a variety of early pear, of fine quality, so called from resembling in color the mineral jargon.

Jarl (yärl), a word of Scandinavian origin, the same as *earl*, and applied in the early history of the Northern European kingdoms to the lieutenants or governors appointed by the kings over each province.

Jarnac (shär-näk), a town of France, in the department of and on the river Charente, where a battle was fought March 13, 1569, between the Catholics under the Duke of Anjou, and the Huguenots under the Prince of Condé. The Protestant forces were defeated. Pop. (1906) 4493.

Jarool. See *Bloodwood*.

Jaroslau (yä'ro-slou), a town of Galicia, Austria, on an affluent of the Vistula, 62 miles w. n. w. of Lemberg, with a castle and a handsome cathedral, manufactures of woolens and linens, etc. Pop. (1910) 23,965.

Jaroslav (yä'ro-slaf), a town of Russia, capital of the government of same name, on the Volga, 162 miles northeast of Moscow. It is the see of an archbishop, and has a theological seminary and a college. Pop. 70,610.—The government has an area of 13,000 square miles and a pop. of 1,072,478. The surface is generally flat and in several places very marshy. It is watered by the Volga and other rivers. The soil is by no means fertile, and the grain produced falls short of the home consumption.

Jarrah (jär'a), a timber tree of West Australia, the *Eucalyptus marginata*, (or *rostrata*), yielding a very durable wood, useful for railway sleepers, jetties, etc., not being liable to the attack of the white ant and the shipworm.

Jarrow (jar'rō), a town of England in Durham, on the Tyne, 6 miles below Gateshead. Its rapid growth from a village to a large town is due to the development of its shipbuilding and iron-smelting industries. The town contains a mechanics' institute, an infirmary, and the church of St. Paul's, where the venerable Bede was buried, and where some of his relics are still preserved. It gives name to a parliamentary division of Durham. Pop. 33,732.

Jasher (ja'sher), Book of, a lost Hebrew work, twice mentioned in the Bible (Josh., x, 13, and II Sam., i, 18), and about which various conjectures have been made. Some authorities suppose that it was a series of annals; others that it was a Hebrew minstrelsy celebrating the exploits of the national heroes. Whatever its contents may have been, it seems from the specimens preserved to have been metrical in form.

Jasmin (shäs-man), Jacques, or Jaquou Jausmin, the chief modern Provençal poet of France, inheritor of the language as well as the spirit of the troubadours, was born in 1798, and died in 1864. Himself of humble parentage, and by trade a hair-dresser, all his poems and songs are written in the peasants' patois of the Garonne. His poetry deserved and acquired more than a local celebrity, and was warmly welcomed not only in Southern France, but throughout the whole of Europe. His principal works are *Lou Charivari* ('The Charivari'), a mock-heroic poem; *L'Aveugle de Castel Cuillé* ('The Blind Girl of Castel Cuillé'), his masterpiece in poetry, which has been translated by Longfellow; *Las Papillotos de Jasmin* ('The Curl-papers of Jasmin'); and *Lous dous Frayre-bessous* ('The Two Twin-Brothers'), 1847.

Jasmine (jas'min), Jas'min, the popular name of plants of the genus *Jasminum*. They are elegant, branched, erect or climbing shrubs, with imparipinnate, trifoliate, or simple leaves, and (usually cymose) white or yellow flowers, from some of which delicious perfumes are extracted. There are about 100 species, most of them Asiatic; some

occur in south and a few in tropical Africa, while one is a native of South-

Common White Jasmine.

ern Europe. The Carolina jasmine is *Gelsemium nitidum*. Also written *Jessamine*.

Jason (jā'sun), in Greek legend, a king of Iolcos in Thessaly, celebrated for his share in the Argonautic expedition. On his return to Iolcos with Medea as his wife, he avenged the murder of his parents and his brother by putting Pelias to death. Unable to retain possession of his throne, however, he fled to Corinth, where, after some time, he married Glauce (or Creusa), daughter of the king, and put away Medea and her children. (See *Medea*.) Different accounts, of legendary character, are given of his death. See *Argonauts*.

Jasper (jas'per), an impure opaque colored quartz, less hard than flint or even than common quartz, but which gives fire with steel. It is entirely opaque, or sometimes feebly translucent at the edges, and presents almost every variety of color. It is found in metamorphic rocks, and often occurs in very large masses. It admits of an elegant polish, and is used for vases, seals, snuff-boxes, etc. There are several varieties, as red, brown, blackish, bluish, Egyptian. —*Agate jasper* is jasper in layers with chalcedony.—*Porcelain jasper* is only baked clay.

Jassy (yäsh'shi), a town of Roumania, in Moldavia, on the Bachlui, several miles from the Pruth. It is built on two hills, and covers a large space, the houses being generally provided with gardens. It has a university, a museum with a public library, a theater, several hospitals, fine hotels and shops. There are few manufactures, but the trade is of some importance, and a great deal of business is done at the fairs. Pop. 75,882, 40,000 being Jews.

Jastrow (yäs'trov), MARCUS (MORDECAI), a Hebrew scholar, was born at Rogasen, Russian Poland, in 1829; died in 1903. He removed to the United States and in 1866 became a rabbi in Philadelphia. He made many contributions to Jewish literature, including a *Dictionary of the Targumim, the Talmud Babli and Yerushalmi*, and *the Midrashic Literature*. Two of his sons became prominent:—JOSEPH, born in 1863, professor since 1888 in the University of Wisconsin, and author of *The Subconscious* and other works on psychology.—MORRIS, born in 1861, professor of Semitic languages in the University of Pennsylvania, and a recognized authority on Semitic religions, languages and literatures.

Jász-Berény (yäs-be'rän'y), a market town of Hungary, 38 miles E. N. E. of Buda-Pest, on both sides of the Zagyva. Pop. 26,791.

Jataka (jä'ta-ka), a celebrated Pali work of about the third century A.D., containing legends relating to the birth of Buddha, and much prized by the Buddhists.

Jatamansi (jä-tä-man'si), an East Indian name for spikenard.

Jateorhiza (jä-ti-o-ri'za), the genus of plants to which calumba belongs.

Játiva (hä-te'vä), a city of Spain, province of and 36 miles S. S. W. Valencia, near the confluence of the Guardamar and Albayda. Pop. 12,600.

Jatropha (ja't'ro-fa), a genus of woody plants with alternate stipulate leaves and cymes of small flowers, belonging to the nat. order Euphorbiaceæ, inhabiting the tropical parts of America. The roots of *J. Manihot* yield manioc or cassava. *J. elastica* yields an elastic substance used as caoutchouc.

Játs (jäts), an Indian race occupying a large part of the Punjab and half of the Rajput States. They are hardy, industrious, agricultural people, rearing large flocks of camels in the desert districts of Sind. Their religion varies with locality, and embraces Brahmanism, the Sikh tenets and Mohammedanism.

Jauer (you'er), a town of Prussia, province of Silesia, 10 miles S. E. of Liegnitz, on the Neisse, with manufactures of cigars, cloth, worsted, leather, etc. Pop. 13,024.

Jaundice (jân'dis), is not specifically a disease, but is rather the indication of bile-coloring matter in the blood, shown by a greenish-yellow color of the skin. This is caused either by disease of the liver, which prevents that organ from separating bile pigments from the blood, or is due to some obstruction in the bile ducts leading to the intestines.

Jaunpur (joun-pör'), a town of India, N. W. Provinces, on the river Gûmti, over which there is a fine bridge. It is an old town, and has some beautiful specimens of architecture. Pop. 42,771.—The district has an area of 1554 sq. miles; pop. 1,202,920.

Jaunting-car (jânt'ing), a light car used in Ireland in which the passengers ride back to back on folding-down seats placed at right angles to the axle, the occupants having their feet near the ground. There is generally a 'well' for receiving luggage, and a seat in front for the driver.

Jaurès (zhô-res'), JEAN LEON, a French statesman, born at Castres, dep. Tarn, September 3, 1859. At twenty-six he was returned to Parliament; lost his seat a few years later; taught philosophy at the Toulouse University; and returned to the Chamber in 1902, where his eloquent speeches made him a political force as the acknowledged champion of socialism. In 1904 he founded the socialist paper, *L'Humanité*, and he was also the author of *Les Preuves: Affaire Dreyfus* (1900), *Action socialiste* (1899), *Etudes socialistes* (1902), and, with other collaborators, *Histoire socialiste* (1902). He was assassinated July 31, 1914, at the outbreak of the European war, probably because of his anti-military views.

Java (jä'va), an island in the Indian Archipelago, the chief of the Dutch colonial possessions; capital Batavia. It is separated by the Strait of Sunda from Sumatra, and by that of Bali from Bali, and extends about 630 miles from east to west; greatest breadth, 126 miles; area, 48,830 square miles. Java and the smaller adjacent island of Madura are divided into seventeen provinces or residences, of which the pop. in 1905 amounted to 30,098,008. Volcanic mountain chains running from east to west, and rising to such points as Smeru (12,250 feet) and Slamat (11,320 feet); low-lying marshy tracts in the north, with such safe and land-locked harbors as Batavia and Surabya; in the south a rocky unbroken coast washed by the heavy surf of the Indian Ocean,—these are its chief characteristics. The mountains, covered with large forests, are separated by exceedingly fertile valleys. With the exception of marshy tracts the climate is as salubrious as that of any other intertropical country; and the more elevated regions are even healthy. The vegetation is varied. Rice is the chief cereal, but coffee and sugar are the staple products; spices are also grown, and some cotton is raised. Other products are cochineal, pepper, tobacco and tea. The famed poison tree, or upas (*Antiaris toxicaria*), is a noted Javanese plant. The forests consist mainly of teak. There are about 100 kinds of mammalia inhabiting Java. These include the one-horned rhinoceros, tiger, panther, tiger-cat, wild hog, several kinds of deer, several kinds of monkeys (but not the orang-outang, which occurs in the neighboring island of Borneo), and enormous bats. The ox, the buffalo and the goat are among the domestic animals. Birds are numerous. Serpents of a venomous kind are frequent, as also are crocodiles, lizards and the land tortoise. The native population belong to the Malay race, and are brownish yellow in complexion, with long, thick, black hair. They are sober, patient and industrious, but quick to avenge affront. In religion they are nominally Mohammedan. The great mass are devoted to agriculture, living in villages each governed by a native chief. Most of the land belongs to the Dutch government, which obtains a large revenue from the island. Till lately it was the custom to utilize the forced labor of the natives in what was called the 'culture system.' The principal exports are coffee, sugar, tea (the production of which is constantly increasing), tin, rice, cinchona, indigo, spices, tobacco, hides and india-rubber. Railways have been introduced, and telegraphic communication is developing rapidly. A governor-general rules Java and the whole of the Dutch East Indies. The history of Java is unknown previous to the eleventh century, when the Hindus founded a dynasty and converted the natives to Brahmanism. This was overthrown by an invasion of the Mohammedans in 1478. They were succeeded by the Portuguese, who arrived in 1511, and these were followed by the Dutch in 1595, who wrested from them the supremacy.

Javelin (jav'e-lin), a short spear thrown from the hand, and in ancient warfare used by both horse and foot soldiers. The Roman javelin (*pilum*) had a barbed iron head and a wooden shaft, the whole length being nearly 7 feet.

Jaxartes (jaks-ar'tēz). See *Sir-Daria*.

Jay (jā), a genus and subfamily of birds belonging to the family of the crows (Corvidæ). The jays have the upper mandible or bill notched or indented near its tip, and the feathers on the top of the head are erectile, and can be elevated at will, to form a kind of crest. These birds are readily domesticated, possess a harsh grating note, and are admirable mimics. They feed on fruits, seeds, worms, insects and the eggs and young of other birds, etc. The common or European jay (*Garrŭlus glandarius*) is the size of an ordinary pigeon, the general color is a light brown inclining to red, while the larger or primary wing-feathers are of a brilliant blue, marked out by bands of black. The blue color reaches its highest brilliancy in the North American blue jay (*Garrŭlus Cyanŭrus cristātus*), which otherwise closely imitates its European representative both in size and habits. The blue jay is exceedingly well known in the United States. Another American jay is the Canada jay or 'whiskey jack' (*Perisoreus canadensis*), a bird of rather somber coloring, but of the bold, noisy and active habits of others of the jays.

Common Jay (*Garrŭlus glandarius*).

Jay, John, an American jurist and statesman, born in 1745; died in 1829. In 1766 he was admitted to the bar, and in 1774 was chosen a delegate to the first American Congress, which met at Philadelphia. He was a member of the second Congress, and in 1778 he was appointed minister plenipotentiary to Spain. In 1782 he was appointed one of the commissioners to negotiate a peace with Britain, and, along with Adams and Franklin concluded a treaty with the British. Returning to the United States he was appointed head of foreign affairs, and afterwards chief justice. In 1794 he was sent as envoy extraordinary to Great Britain, and concluded a treaty which has been called after his name, and $1,000,000 was given to Americans on account of illegal captures by British vessels, the E. boundary of Maine was fixed, etc. The treaty excited bitter opposition on the part of the party that favored France, but was finally accepted. While absent in England he was elected Governor of New York, and after filling two terms was nominated and confirmed in his former office of Chief Justice of the Supreme Court. This honor he declined and spent the remainder of his life in privacy.

Jazyges (ja-zi'ges), a Sarmatian tribe, composed of bold, savage horsemen, dwelling in wagons and tents, its home being to the north of the Sea of Azov. In the first Christian century they moved westward to Hungary, whence they kept up a fierce warfare with the surrounding peoples. Their power was finally broken by the Huns and Goths. Hungary has a district named Jazygia, but its Magyar inhabitants have no connection with the ancient Jazyges.

Jeannette (jen'net), a borough of Westmoreland county, Pennsylvania, on the Pennsylvania R. R., 4 miles W. of Greensburg. It has manufactures of flint and window glass, chemicals and electrical supplies. Pop. 8077.

Jeannette Expedition. See *North Polar Expeditions.*

Jebb (jeb), Richard Claverhouse, Greek scholar, was born at Dundee, Scotland, in 1841. Educated at St. Columba's College, Dublin, the Charterhouse, London and Cambridge University, he was graduated as senior classic at Trinity College in 1862. In 1869 he became public orator of that university, and in 1875 he was called to fill the Greek chair in Glasgow University, which he resigned in 1889, on being appointed Greek professor at Cambridge. His best-known works are *The Attic Orators; Modern Greece; Life of Richard Bentley; Homer; Introduction to the Iliad and Odyssey;* and his admirable edition of Sophocles, (6 vols. 1883-97).

Jeddo. See *Tokio.*

Jefferson (jef-er-sun), Joseph, actor, born in Philadelphia, Pennsylvania, in 1829. After the usual career of a strolling actor, in 1858 he came forward prominently as *Asa Trenchard* in '*Our American Cousin,*' which ran for more than 150 nights. His great part, however, was that of '*Rip Van Winkle,*' in which his success was phenomenal, and which he continued to play almost interruptedly for many years to admiring audiences. He died April 23, 1905.

Jefferson, Thomas, the third President of the United States.

was born April 13, 1743, at Shadwell, Albemarle county, Virginia. He studied for two years at the college of William and Mary, Williamsburg, and then commenced the study of law. In 1769 he was elected a member of the provincial legislature, and in 1775 he took his seat for the first time in Congress. It was he that drew up the draft of the Declaration of Independence, which (in a slightly modified form) was signed on July 4, 1776. In 1779-81 he was governor of Virginia. In May, 1784, Congress elected him minister plenipotentiary to France, in addition to Adams and Franklin; next year he was appointed sole minister, and his residence in Europe lasted about five years. On his return he was appointed Secretary of State by Washington, an office which he continued to fill until the end of 1793, when he resigned in consequence of dissensions with Hamilton. In 1796 he was elected Vice-President of the United States; but he was seldom consulted by the President, and he was out of harmony in political views with the government. In 1800 he was elected President, defeating John Adams, the former President. The most important public act of his administration was the purchase of Louisiana from France, an act which enormously extended the area of the United States. In 1809 he retired to private life at his residence of Monticello, in Virginia; but in 1819 he took the foremost part in the founding of the University of Virginia, at Charlottesville, Va. He was rector of this institution until his death, which occurred at Monticello, July 4, 1826. Jefferson was the acknowledged head of the Republican party, as then called (the present Democratic party), from the period of its organization. He published *Notes on Virginia*, with many and various essays on political and philosophical subjects, and a *Manual of Parliamentary Practice*, for the use of the Senate of the United States.

Jefferson City, a city of Missouri, capital of the state and of Cole county, on the Missouri River, 125 miles W. of St. Louis, on the Missouri Pacific Railroad. It has a Carnegie Library, Lincoln Institute, a normal school (colored), and other public institutions. It contains the new state capitol, costing $3,500,000. There are various manufactures and coal and iron are found in the vicinity. It is a general trade center. Pop. 15,000.

Jeffersonville, a city of Indiana, capital of Clark county, on the Ohio River, opposite Louisville, Kentucky, 108 miles S. of Indianapolis. It contains the Jefferson depot for army supplies, the Indiana reformatory, extensive car-works. Two bridges connect it with Louisville and several railroads here cross the river; also electric interurban lines. Pop. (1910) 10,412.

Jeffrey (jef'rē), FRANCIS, LORD, a Scottish judge and critic, was born at Edinburgh in 1773, and died in 1850. He was educated at Edinburgh high school, the University of Glasgow and Queen's College, Oxford, and passed advocate in 1794. He took part in establishing the *Edinburgh Review* in 1802 (with Sydney Smith, Lord Brougham and others), and after two numbers had been issued was installed as its editor, a position he held for twenty-six years. In 1831 he was made lord-advocate, and he sat for several years as member of parliament for Edinburgh. He was made a lord of Session in 1834, and continued during a period of sixteen years to be one of the ablest and most popular judges of the supreme court in Scotland.

Jeffrey of Monmouth. See *Geoffrey.*

Jeffreys (jef'rēs), GEORGE, Baron, an infamous English judge, commonly known as *Judge Jeffreys*, was born in 1648, and died in the Tower in 1689. Soon after commencing his professional career he was chosen recorder of London; and he was appointed, successively, a Welsh judge and chief justice of Chester, created a baronet in 1680, and later appointed chief justice of the King's Bench. He was one of the advisers and promoters of the arbitrary measures of James II, and for his sanguinary and inhuman proceedings against the adherents of Monmouth on the 'bloody western circuit,' was rewarded with the post of lord high-chancellor (1685). On the arrival of the Prince of Orange, the chancellor, who had disguised himself as a seaman, was detected and carried before the lord-mayor, who sent him to the lords in council and by whom he was afterwards committed to the Tower.

Jehoshaphat (je-hosh'a-fat), son of Asa, and fourth king of Judah, 915-890 B.C. He was noteworthy in his strenuous endeavors to abolish the use of idols. Jehoshaphat denotes 'Jehovah's judgment.'

Jehovah (je-hō'va; Heb. Yahweh), the popular pronunciation of the sacred name of God among the Hebrews, represented in the text of the Old Testament by the four consonants J (or Y), H, V, H. The Hebrews cher-

ished the most profound awe for this name, and this sentiment led them to avoid pronouncing it, and to substitute the word *Adonai*, which signifies *the lord*, which custom still prevails among the Jews. In some portions of the Pentateuch Jehovah is the name regularly applied to God, in others Elohim: this has led to a theory of there being two authors respectively for these portions. See *Elohim*.

Jehu (je'hū), the founder of the fifth dynasty of the kingdom of Israel. He was a commander in the army of Jehoram, when Elisha sent one of the 'children of the prophets' to consecrate him king of Israel at Ramoth-Gilead (B.C. 895). He immediately attacked Jehoram, whom he slew in battle, and then entered upon a work of extermination in which were slain seventy of Ahab's children and forty-two brothers of Ahaziah, king of Judah. He died after a reign of twenty-eight years. His name occurs more than once on the monuments discovered at Nineveh.

Jeissk. See *Ieisk*.

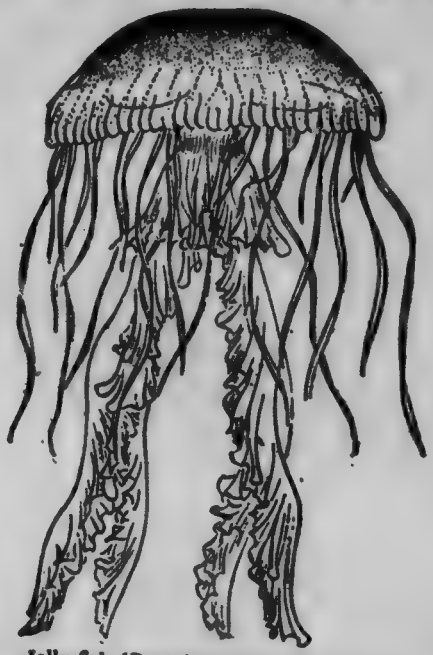
Jejunum (je-jū'num; Lat. *jejunus*, empty), the second portion of the small intestine, succeeding the *duodenum*, and so named from its generally being found empty after death. See *Intestine*.

Jeletz. See *Ielets*.

Jellicoe, Sir John Rushworth, a British admiral, born December 5, 1859. He entered the navy when thirteen; served in the Egyptian war in 1882; served in China, 1898–1901, and was in command of the naval brigade during the attempted relief of the Peking Legations. He served as rear-admiral in the Atlantic Fleet, 1907-08, and from 1914 to 1916 was in command of the Grand Fleet during the European war.

Jelly (jel'i), a name for such substances as are liquid when warm, but which coagulate into a gelatinous mass when cold. Animal jelly is prepared from the soft parts of animals, and even from bones when sufficiently crushed. It is a colorless, elastic, transparent substance without taste or smell, and it is soluble in warm water. Analysis shows that its constituents are carbon, hydrogen, nitrogen, with a possibility of sulphur. Vegetable jelly is prepared from the juice of unripe fruit heated in a solution of water to 40° C. This extract when boiled with sugar forms a pleasant and wholesome substance. Doctors now incline to the opinion that animal jelly is less nourishing than ordinary animal food.

Jelly-fishes, the popular name of certain coelenterate animals, of the class Hydrozoa, found in the sea, and often familiarly called Sea-blubbers and Sea-nettles, from their appearance and stinging property. When in the water they present a singularly beau-



Jelly-fish (*Dactylometra Quinquecirra*).

tiful appearance, one of the most common resembling a clear crystalline bell, which swims gracefully through the water by alternately expanding and contracting its body. They are very voracious, and move upon their prey (minute animals) with great rapidity, seizing it with their long, stinging tentacles. The phosphorescence of the sea is to some extent explained by the pale light which they diffuse in the darkness. See *Medusidæ*.

Jelum. See *Jhelum*.

Jemappes (zhé-máp), a village of Belgium, in Hainault, near Mons, on the Scheldt, celebrated as the place of the first great battle in the French revolutionary war, fought November 6, 1792, when the French under Dumouriez defeated the Austrians.

Jena (yā'nä), a town of Germany, in the grand-duchy of Saxe-Weimar, 12 miles east of Weimar, on the Saale, a place of little importance except for

its university, which was opened in 1558. It has in all 94 professors and lecturers, an anatomical theater, botanical garden, zoölogical museum and other scientific collections, observatory, library of 200,000 volumes, and about 600 students. On October 14, 1806, the Prussians (70,000 men) under Prince Hohenlohe were defeated here by the French under Napoleon (90,000 men). Pop. 26,355.

Jenikale. See *Yenikale.*

Jenisei, a river of Siberia. See *Yenisei.*

Jenner (jen'er), EDWARD, an English physician, celebrated for having introduced the practice of vaccination as a preventive of the smallpox. He was born at Berkeley in Gloucestershire in 1749; studied at London under the celebrated anatomist John Hunter, and afterwards settled in Gloucestershire as a medical practitioner. About 1776 the belief common among the peasants that casual cowpox acquired in milking cows was a preventive of smallpox caused him to direct his inquiries to the subject, and led to the introduction of the process of vaccination in 1796. His method at first met with great opposition from the medical profession, but was ultimately universally accepted both by his own and foreign nations. Parliamentary grants to the extent of over £30,000 were made to him, and congratulatory addresses were sent to him by continental monarchs. He died at Berkeley in 1823. He published an *Inquiry into the Causes and Effects of Cowpox* (1798), *Further Observations on Variolæ Vaccinæ or Cowpox* (1799), and a celebrated paper on the cuckoo in the *Philosophical Transactions.* See *Vaccination.*

Jenner (jen'er), SIR WILLIAM, born at Chatham in 1815, was educated at University College, London, where he was graduated M.D. in 1844. He became in 1848 professor of pathological anatomy, and in 1857 of clinical medicine in the University College; in 1861 physician to the queen; in 1862 professor of the principles and practice of medicine in University College; in 1868 he was made a baronet, and in 1881 was elected president of the College of Physicians. Dr. Jenner wrote a number of papers on specific diseases, and was the first to establish the difference in kind between typhus and typhoid fevers. Died in 1898.

Jennings, SARAH. See *Marlborough, Duke of.*

Jenolan Caves, a series of great caves in the limestone strata of the blue Mountains of New South Wales, 100 miles w. of Sydney. Discovered in 1841, they were made a government reservation in 1866. In grandeur, magnitude and variety of cave scenery they approach the Mammoth Cave of Kentucky.

Jephthah (jep'thâ), one of the Hebrew judges, who defeated the Ammonites, but having rashly made a vow that if he was victorious he would sacrifice to God as a burnt-offering whatever should first come to meet him from his house, he was met on his return by his daughter, his only child, whom he sacrificed, in consequence, to the Lord (Judges, xi, 29, 40). Some commentators have maintained that this meant devoting her to perpetual virginity in the tabernacle. Jephthah ruled six years as a judge and general (Judges, xi, xii). The sacrifice of Jephthah's daughter is the subject of Handel's last oratorio, and of a Latin drama by George Buchanan.

Jerboa (jèr-bō'a; *Dipus*), a genus of small animals belonging to the order Rodentia or Gnawers, having extremely long hind limbs, which gives them an extraordinary power of leaping, so that their movement seems more like flying than running. The forelimbs are armed with short, powerful claws, with which they excavate their burrows and extract the roots on which they chiefly live.

Egyptian Jerboa (*Dipus Ægyptius*).

They are gregarious and nocturnal in their habits, and hibernate during the colder seasons. The jerboas are found chiefly in Asia and Northern Africa. The typical species is the Egyptian form (*Dipus Ægyptius*).

Jereed (je-rēd'), a wooden javelin about 5 feet long, used in Persia and Turkey, especially in mock fights.

Jeremiah (jer-e-mī'a), the second of the great prophets of the Old Testament, flourished during the darkest period of the Kingdom of Judah, under Josiah, Jehoahas, Jehoiakim, Jeconiah and Zedekiah. He was called to the prophetic office about 629 B.C., in the reign of Josiah, and lived to see the capture of Jerusalem by Nebuchadnezzar in 586 B.C., who offered him a home at Babylon, but he preferred to stay among the wretched remnant of the people left in Judah. He is said to have been stoned to death in Egypt by some of his country.

men, who were irritated by his rebukes. He wrote two Old Testament books, the *Prophecies of Jeremiah* and the *Lamentations*. The text of the prophecies is in a somewhat confused state, there being no chronological order. Jeremiah wants the dignity and splendor of Isaiah, but exhibits great tenderness and elegiac beauty of sentiment. Some critics also attribute to him the book of Deuteronomy and several of the Psalms. See also *Jews*.

Jerez, or XEREZ (*he*-reth'), de la Frontera, a town of S. W. Spain, in Andalusia, province of Cadiz, 16 miles N. N. E. of Cadiz. It is a well-built and flourishing town, with some handsome edifices, chiefly churches and the Alcazar, an old Moorish castle in ruins. It is noted for its wine, well known under the name of sherry, which is exported in large quantities. Pop. 63,473.

Jerez de los Caballeros (or XEREZ; kä-väl-yä'-rōs), a town of Spain, province Badajos, partly surrounded by a wall, which dates from the time of the Moors. Pop. 10,271.

Jer-falcon. See *Falcon*.

Jericho (jer'i-kō), a considerable town of ancient Judea, on a plain about 18 miles N. E. of Jerusalem, noted, especially in Solomon's time, for its balsam gardens and its thickets of palm-trees and roses, and carrying on a flourishing trade in balsam and spices. It was the key of Palestine, and was therefore invested and taken by the Israelites, who had passed the Jordan under Joshua to conquer this country. Its site at the present is occupied by the village of Riha. Taken by British Feb. 22, 1918.

Jericho, ROSE OF (*Anastatica hierochuntica*). See *Rose of Jericho*.

Jerked Beef, from the Chilian word *charqui*, beef cut into strips of about an inch thick, and dried in the sun to preserve it. It is used in Chile and other parts of South America, and has been tried in Australia. When well prepared it will keep for a great length of time.

Jerkin-head, in architecture, the end of a roof when it is formed into a shape intermediate between a gable and a hip, the gable rising about halfway to the ridge, so as to have a truncated shape, and the roof being hipped or inclined backwards from this level.

Jeroboam (jer-o-bō'am), the name of two kings of Israel.—JEROBOAM I, the son of Nebat, on Solomon's death (973 B.C.) was made king of the ten tribes who separated from Judah and Benjamin. He made Shechem his capital, forbade his subjects to resort to the temple at Jerusalem, and set up golden calves at the shrines of Dan and Bethel. He died in the 22d year of his reign.—JEROBOAM II, the most prosperous of the kings of Israel, reigned 823-782 B.C. He repelled the Syrians, took their cities of Damascus and Hamath, and reconquered Ammon and Moab. But licentiousness and idolatry were prevalent during his reign. The authorities for the history of his time are II Kings, I Chron., Amos, and Hosea.

Jerkin-head Roof, Boscombe, Hants.

Jerome (jer'ōm), JEROME K., author, born at Walsall, England, in 1861. His humorous writings include *Three Men in a Boat*, *Idle Thoughts of an Idle Fellow*, *Second Thoughts of an Idle Fellow*, etc. As a dramatist he achieved remarkable success with *The Passing of the Third Floor Back*.

Jerome, ST., full name EUSEBIUS HIERONYMUS SOPHRONIUS, one of the most learned fathers of the Latin Church, was born sometime between 331 and 345 in Dalmatia, of wealthy parents. He was baptized in Rome, went, in 373, to Antioch in Syria, and in 374 retired to the desert of Chalcis, where he passed four years in severe mortifications and laborious studies. He left his solitude to be ordained presbyter at Antioch, went to Constantinople to enjoy the instruction of Gregory of Nazianzen, and in 382 returned to Rome, where his expositions of the Holy Scriptures gained him many adherents, especially among the rich and noble ladies, two of whom, St. Marcella and St. Paula, became celebrated for their piety. St. Paula accompanied him in 386 to Bethlehem, where she founded four convents, in one of which Jerome remained till his death about 420. His Latin version of the Old Testament from the original language was the foundation of the Vulgate. He took an active part in many controversies, notably those regarding the doctrines of Origen and Pelagius.

Jerome of Prague, a Bohemian dissenter, born about 1360-70, in faith and sufferings the companion of the famous John Huss. Together they made a vigorous crusade

against the dissoluteness of the clergy, the worship of relics, etc. When Huss was imprisoned in Constance, Jerome hastened to his defence, but was seized and carried thither in chains (1415). After much suffering he consented to recant his heresies, but on being subjected to a new examination solemnly retracted his recantation, and made a vigorous vindication of the principles of Huss and Wickliffe. On May 30, 1416, he was burned at the stake, and his ashes were thrown into the Rhine.

Jerrold (jer'old), Douglas, an English humorist and play-writer, born in 1803, the son of the manager of the Sheerness Theater. After being for a short time a midshipman, he was bound apprentice to a printer in London. His first play, *More Frightened than Hurt* (1818), was not at first successful, but his *Black-eyed Susan* (1822) ran for 300 successive nights at the Surrey Theater. Jerrold's subsequent dramas were the *Rent-day*, *Nell Gwynne*, *The Housekeeper*, *The Prisoner of War*, *Bubbles of a Day*, *Time Works Wonders*, *St. Cupid*, *The Catspaw*, *The Heart of Gold*, and several others. He contributed extensively to periodical literature, founding and conducting successively the *Illuminated Magazine* and *Douglas Jerrold's Shilling Magazine*, and subsequently editing *Lloyd's Weekly Newspaper*. To *Punch* he contributed his inimitable *Mrs. Caudle's Curtain Lectures*, *Punch's Letters to his Son*, etc. Though a vigorous master of satire and repartee, his sayings had no personal malevolence. He died in 1857.

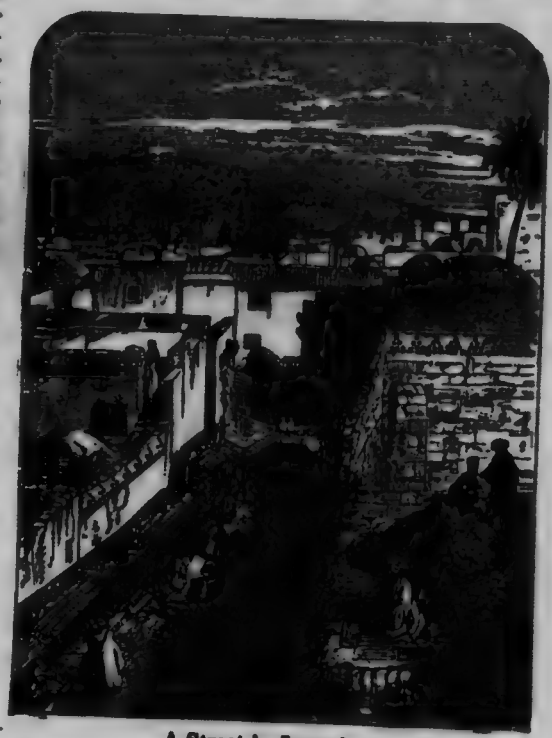
Jersey (jèr-zi), the largest and most valuable of the Channel Islands of England, about 15 miles off the northwest coast of France; greatest length, east and west, about 12 miles; greatest breadth, 7 miles; area, 44.87 sq. miles. Its coast, particularly on the north, is extremely rugged and precipitous, is deeply indented all round, and has a number of good bays and harbors, the chief of which are St. Aubin and St. Helier. The island is fertile, abundantly wooded and well cultivated. The climate is peculiarly mild and agreeable. Wheat is the principal cereal raised, and large quantities of grapes, peaches, melons, pears and other fruits are exported, as also vegetables, and especially early potatoes for the London market. Cows of the famous Jersey or Alderney breed are reared and exported in great numbers. The lower class speak a sort of old Norman French dialect, while French is the language of the upper classes and the law courts. Jersey has its own legislature, known as the 'States.' Appeals lie to the king in council. The island is attached to the diocese of Winchester. Principal town, St. Helier. Pop. 52,796. See *Channel Islands*.

Jersey City, a city, capital of Hudson county, New Jersey, opposite New York, from which it is divided by the Hudson (North) River and with which it is connected by ferries and tunnels. It contains the mainland terminals of practically all the railroads reaching New York City except New York Central lines. It is one of the manufacturing cities of the United States, and has a large export trade. The principal manufactures are sugar, soaps and perfumery, tobacco, graphite products, electrical supplies and castor oil. Manufacturing and trade in lumber, oakum, paper and textiles are also important. The commission form of government was adopted in 1913. Pop. 267,779.

Jersey Shore, a borough of Lycoming county, Pennsylvania, 12 miles w. s. w. of Williamsport. It has railroad shops, a foundry, cigar factories, etc. Pop. 5381.

Jerusalem (je-rō'sa-lem; Ar. *El-Kuds*, 'The Holy'), one of the most ancient and interesting cities in the world, in Palestine, in the maritime section of Syria. It stands on an elevated site (about 2500 feet above the sea) within the fork of two ravines, the Valley of Jehoshaphat on the east, and the Valley of Hinnom on the south and west, while a third ravine or valley—the Tyropœon—partially traverses it from south to north. On the east side of this valley is Mount Moriah, now the Mohammedan quarter of the city, where anciently stood the palace and temple of Solomon. Immediately south of this stood the mountain fortress of Zion, known as the City of David, and later as the Akra, or Lower City. This part of the city is now waste. According to another view, however, the 'City of David' is the Upper City on the opposite or western side of the Tyropœon Valley, and to this the name of Zion is given by current tradition. This part is where the quarter of the Armenians, the citadel, and the Protestant church now are. Of the three walls which Jerusalem eventually possessed, the first wall, that of David, was for the defense of this Upper City (the traditional, but probably not the ancient Zion). The second wall took in a considerable area on the east and northeast, while a new town or suburb, Bezetha, which grew up on the north of this, was enclosed by a third wall, built by Agrippa I. The present limits are much the same

as those indicated by the third wall, only that the old Lower City and the southern part of the old Upper City are unpopulated places outside the modern walls. Of the seven gates only five are now used. The interior of the city is much occupied by mosques, churches and convents. The houses are substantially built of stone, and present in most cases no windows to streets, which accordingly—generally narrow, ill-paved and sloping to the center—are merely long lanes with dead walls on each side of them. In the northwest quarter is the Church of the Holy Sepulcher, so called because alleged to contain under its roof the very grave in which the Saviour lay. This church, which was built by Helena, the mother of Constantine the Great, is remarkable for the richness of its decorations and the number of pilgrims by whom it is visited. A large area in the east of the city is occupied by the enclosures known as El Haram-Esh-Sherif ('The Noble Sanctuary'), which is in the form of a regular parallelogram surrounded on all sides by a lofty wall. The most conspicuous building within is the Mosque of Omar, called also Kubbet-es-Sakhrah ('Dome of the Rock'), a splendid structure of octagonal form which occupies the site of the Jewish Temple. Among the notable convents are the Latin convent, and the still more extensive Armenian convent capable of accommodating 1000 pilgrims. Within the last twenty years or so a considerable improvement has taken place in the appearance of the city as well as of the surrounding country. Among the rest, hotels in which all modern conveniences and comforts may be enjoyed have been erected for the hosts of pilgrims and travelers who annually visit the place.



A Street in Jerusalem.

The population is given as about 60,000, of whom about two-thirds are Jews. Of the remainder about two-thirds are Christians and one-third Mohammedans. The first railway to Jerusalem was opened in 1893.

Jerusalem is not mentioned by name till about B.C. 1500, when it was in the hands of the Jebusites. The lower part was wrested from them by Joshua, but the upper part continued in their possession till the time of David, who took up his residence in the stronghold of Zion, and made Jerusalem the capital of his kingdom. It reached the height of its glory under Solomon, after whose time it declined. In 586 Nebuchadnezzar took and destroyed the city after a long siege, and carried off those of the inhabitants whom the sword had spared as captives to Babylon. On the return from the captivity the temple was rebuilt, B.C. 515. The walls were not rebuilt till the time of Ezra and Nehemiah, 455 B.C. The city had regained a considerable degree of prosperity, when it was sacked and its walls leveled by Antiochus of Syria in 168. Under the Maccabees Jerusalem, in common with Judea, became once more independent, 165 B.C. It next became tributary to Rome, and had been greatly beautified and enriched with a fine new temple by Herod when the Saviour appeared. In A.D. 36 Jerusalem was taken by a party of Jews who had revolted against Rome. Titus, the son of the emperor Vespasian, regained it in the year 70, after a terrible siege; the temple was burned, and the city razed to the ground. In 131 Hadrian ordered the city to be rebuilt, but it continued depressed till the beginning of the fourth century, when, Rome having become Christian, Jerusalem shared in the bene-

fit, and assumed the appearance of a distinguished Christian city, under the fostering care of Helena, mother of Constantine the Great. This period of prosperity, prolonged by a succession of Christian emperors, was suddenly terminated in 636, by the conquest of the Mohammedans, under the Arabian Caliph Omar. In 1099 the Crusaders took Jerusalem by storm, and made it the capital of a Christian monarchy, which with difficulty maintained its existence till 1187, when it was overthrown by Saladin. In 1517 Jerusalem fell into the hands of the Turks, but in 1917, during the European war, it was taken by the British army and once more became a Christian city.

Jerusalem Cherry, a name given to two shrubs of the genus *Solānum* (potato genus) cultivated as ornamental plants.

Jervis, Sir John. See *Vincent, Earl of St.*

Jesi (yā'sē), a town in Italy. See *Iesi.*

Jessamine. See *Jasmine.*

Jesso, an island of Japan. See *Yesso.*

Jessulmeer, or Jeysulmeer. See *Jaisalmer.*

Jester (jes'tēr), or Court Fool, a buffoon or person maintained by the noble and wealthy to make sport by jests and merry conceits for them and their friends. The professional jesters usually wore a motley or parti-colored dress, and a cap or cowl of gay colors furnished with bells and asses' ears, or crowned with a cock's comb. In Britain the last jester regularly attached to the royal household seems to have been Archie Armstrong, the jester of James I and Charles I.

Jester.—Antiquarian Club.

Jesuit Porcelain, a name given to Japanese porcelain of the sixteenth century, which the Jesuits had caused to be decorated with Madonnas, images of the saints, and Christian emblems. It is now rare.

Jesuits (jes'ū-itz), or Society of Jesus, the most celebrated of all the Roman Catholic religious orders, founded in the sixteenth century by Ignatius Loyola, and established by a papal bull in 1540, the founder being the first *general* of the order. The members, in addition to the usual vows of poverty, chastity and implicit obedience to their superiors, were bound by a fourth, viz., to go whithersoever the pope should send them, as missionaries for the conversion of infidels and heretics, or for the service of the church in any other way. The popes Paul III and Julius III, seeing what a support they might have in the Jesuits against the Reformation, granted to them privileges such as no body of men in the church or state had ever before obtained. They were permitted to enjoy all the rights of the mendicant and secular orders; to be exempt from all episcopal and civil jurisdiction and taxes, so that they acknowledged no authority but that of the pope and the superiors of their order; to exercise every priestly function, parochial rights notwithstanding, among all classes of men, even during an interdict; and they could absolve from all sins and ecclesiastical penalties, dispense themselves from the observance of fasts and probation of meats, and even from the use of the breviary. Their general was invested with unlimited power over the members, the dispersion of whom throughout society, with the most entire union and subordination, was made the basis of the order. The constitution of the body was drawn up in great part by Loyola himself, but the second general, Laynez, had much to do in directing its early movements.

The order soon approved itself to the pope by its zealous activity, and its success as the most effectual barrier against the growing power of Protestantism. The Jesuits carefully avoided all appearance of spiritual pride, often wore the ordinary garb of the country, and generally dealt with all matters in a spirit of worldly policy and accommodation to circumstances. Their grand object was the establishment of the papal power, not only against Protestantism, but against all the claims of kings and national churches. In 1541 their foreign missions were begun by Francis Xavier in the Portuguese East Indies, and were attended with great success. Other Jesuits went to South America, and labored successfully in Brazil and Paraguay. In Europe they became the teachers of the higher classes, and introduced on a grand scale improvements in the current system of instruction. The young

nobility were almost exclusively sent to them, and even from Protestant countries. It was in Catholic countries, however, that their strength lay; in England and the Protestant states of the north they were not so successful, their repeated attempts to establish themselves there proving fruitless.

Yet notwithstanding the great favor which they enjoyed at courts and among the people, the non-Jesuit clergy, the older orders of monks, the universities, and the learned men of the age soon began to dread the powerful influence which the society was rapidly acquiring, while their pro-papal spirit made them the objects of suspicion and jealousy to statesmen, on account of their opposition to Gallican principles. For this reason the parliament and higher clergy of France for twenty years resolutely resisted the attempts of the Jesuits to gain a footing in that country. It was owing chiefly to the favor of the Guises that they at last, in 1562, were legally recognised in France under the name of *Fathers of the College of Clermont*, with a humiliating renunciation of their most important privileges. They appeared in Germany about 1549, and soon secured chairs in the universities of Prague, Ingolstadt, Cologne, Munich, Treves, Augsburg, and other places. They showed remarkable political talent in the thirty years' war, in which the league of the Catholics could do nothing without them. But while they were thus successful in this part of Europe, in France and the Netherlands the Jansenist controversy injured their position, and the character of the Jesuits received a fatal wound from the pen of Pascal, whose famous *Provincial Letters*, written with admirable wit and argument, unduly exaggerated the dangerous element of their doctrines and practices, and the accommodating morality which allowed interest and external circumstances to determine the rule of conduct, which, according to his false assertion, counseled evasiveness and mental reservation.

Towards the middle of the eighteenth century a general hostile movement against the Jesuits, alleging incompatibility of their privileges with the rights of others, prompted a powerful movement against them in various countries. In 1759 the efforts of the minister Pombal brought about their expulsion from Portugal, and the confiscation of their possessions in that country. In France the commercial complications of a Jesuit trading-house at Martinique with some French merchants led to an inquiry, which involved them financially. Louis XV tried to save the society by demanding a reform of its constitution, a demand refused by the general of the order, Lorenzo Ricci, in the famous terms, *Sint ut sunt, aut non sint* ('Let them be as they are, or cease to be'). The result was a decree issued in 1764 for the abolition of the order in all the French possessions. Three years later they were expelled from Spain and soon after from Naples, Parma and Malta; and finally in 1773 Pope Clement XIV was induced to publish his famous bull *Dominus ac Redemptor Noster*, by which the Society of Jesus was temporarily suppressed in most countries. They were then obliged to quit their houses, lay aside the garb of the order, renounce all intercourse with one another, and either enter some of the other orders or put themselves under the superintendence of the bishops. They received annuities from the revenues of their confiscated estates, except in Portugal, in which country they were prohibited from residing, as also in Spain; while in the States of the Church, in Upper Italy and in Germany, Hungary, Poland and even in France they were suffered to remain as private persons. An attempt in 1787 to revive the society under the name of *Vincentines* was unsuccessful; but in 1814 Pius VII issued a bull (*Sollicitudo omnium Ecclesiarum*), which reestablished it in almost the same form from which it had fallen. In 1815 a college was given them at Modena, and they did not delay to accept the invitations of the kings of Sardinia, Naples and Spain. Subsequently they found entrance into all European countries. In Italy, since the establishment of the new kingdom, in 1861, the Jesuits have had no legal existence, but continue, nevertheless, an influential and well-known body. In Britain they have been permitted to open several educational institutions. In Ireland also they have a number of important institutions, and, within a recent period, in Scotland. They have also colleges in the United States and in Canada. Their enemies assert it was through them that the Œcumenical Council of 1870 was held, and that they have had a decided influence in shaping the recent policy of the papal authorities. By the law of July 4, 1872, they were expelled from the German Empire, and they were expelled from Portugal after the revolution of 1910. In 1880 they were expelled from their conventual establishments in France, and a considerable number of them went to Britain. Despite all the opposition to them the Jesuits have now in the world more than 200

colleges and 50,000 students, while their priests number nearly 7000.

Jesuits' Bark, or PERUVIAN BARK, the bark of a certain species of *Cinchona*, so called because it was first introduced into Europe by the Jesuits. See *Cinchona*.

Jesuits' Nut, a name sometimes given to the fruit of the *Trapa natans*. See *Trapa*.

Jesus (jē'zus), son of Sirach, the author of the apocryphal book called *Ecclesiasticus* (which see).

Jesus Christ (*Iēsous*, the Greek form of Joshua or Jeshua, contracted from Jehoshua, meaning, help of Jehovah, or Saviour; *Christos*, the Greek translation of the Hebrew Messiah, anointed), the founder of the Christian religion; born in Bethlehem, according to the received chronology in the year of Rome 754, but in reality some four years earlier, that is, in 4 B.C. He was born of the Virgin Mary, of the tribe of Judah, who was betrothed to Joseph, by occupation a carpenter. Two genealogies of Joseph, differing very much after the time of David, are given, one by Matthew, chap. i; the other by Luke, chap. iv. Our information concerning him is derived almost entirely from the accounts of his life written by the four evangelists, Matthew, Mark, Luke and John, and incidental notices in other parts of the New Testament. Before the birth of the Holy Child, Joseph and Mary, then residing in Nazareth, went to Bethlehem to be taxed, and it was there, in a manger, the inn being full, that Jesus was born. On the night of his birth an angel announced the coming of a Saviour to shepherds tending their flocks by night in the field. On the eighth day he was circumcised according to the law of Moses. Soon after his birth he was hailed by the adoration of the Magi or wise men of the East, who were miraculously directed to the house where the young child was, and presented royal gifts. Herod, alarmed at hearing of the birth of one who was to be King of the Jews determined to destroy all the male children of Bethlehem and its vicinity of the age of less than two years, for the purpose of effecting the death of Jesus. But Joseph, being miraculously warned of the danger, fled to Egypt with the Virgin and her child, and on his return, after the death of Herod, went to reside at Nazareth in Galilee, whence Jesus was often called a Nazarene. We have no further accounts of Jesus till his twelfth year, when his parents took him with them to Jerusalem. Here after being lost for three days he was found in the temple sitting among the doctors, hearing them and asking them questions. Regarding the following eighteen years of his life the evangelists are silent. He is supposed during this period to have followed his father's occupation, that of carpenter. At the age of about thirty he appeared as a public teacher, having been baptized in the Jordan by John, who recognized him as the Messiah. He then retired to the wilderness, where he passed forty days in fasting, meditation and prayer previous to being tempted of the devil, as described by the evangelists. He then began to select his disciples, to teach publicly, and perform miracles. Among the notable incidents of his public career, as narrated by the evangelists, are, the changing of the water into wine at the marriage in Cana of Galilee (his first miracle); the driving of the traders out of the temple during the feast of the passover; the curing by a word of a nobleman's son lying ill at Capernaum; his scornful reception as a preacher in the city of Nazareth on account of his humble parentage; the calling of the twelve apostles; the sermon on the mount; the healing of the centurion's servant and the restoration of the widow's son at Nain to life; the healing of the man at the pool of Bethesda; the miraculous feeding of 5000 persons with five loaves and two fishes; the calming of the tempest on the lake of Gennesaret; his healing the Syrophenician woman's daughter of an unclean spirit; the transfiguration on the mountain; the raising of Lazarus at Bethany; the cure of blind Bartimæus at Jericho; the entry with triumph into Jerusalem; the fourth feast of the passover with his disciples, known as the Last Supper; the agony in the garden of Gethsemane; the betrayal and the condemnation before the sanhedrim; the trial before Pilate, and the crucifixion on Golgotha or Mount Calvary. The body of Jesus was taken down from the cross by Joseph of Arimathea, and placed in a tomb about which the Jewish priests set a guard. But on the third day, i. e. on the day thence called the Lord's day and made the first day of the week, he rose from the dead, appeared to his disciples and others, and on the fortieth day after his resurrection, while with his disciples on the Mount of Olives, was visibly taken up into heaven. These events of his public life are generally considered to have occupied three years.

Jesus College, Cambridge, an institution founded by Alcock, bishop of Ely, in 1496.

Jesus College, Oxford, was founded by Queen Elizabeth in

1871. Many of the fellowships and scholarships are confined to persons born or educated in Wales. The college is thus distinctively a Welsh one. This was the first college founded on Protestant principles.

Jet, a solid, dry, black, inflammable fossil substance, harder than asphalt, susceptible of a good polish, and glassy in its fracture, which is conchoidal or undulating. The finest quality and chief supply of it is found at Whitby, England, in beds of the Upper Lias shale. Spain also supplies fine jet, and much is obtained in France. It is the altered fossilized wood of coniferous trees, being a peculiar form of lignite. It is wrought into buttons and personal ornaments of various kinds.

Jetsam (jet'sam), or JETTISON, goods thrown overboard from a ship in danger. See *Flotsam*.

Jette, or JETHE (jet-tē'), the fiber of *Marsdenia tenacissima*, a small climbing plant of the nat. order Asclepiadaceæ, growing in some elevated regions of North India. The fiber is fine and silky and of great strength.

Jettison. In maritime law, the act of throwing overboard all or part of a ship's cargo as a matter of necessity, either in a storm to lighten the vessel, to prevent capture by an enemy or for other justifiable cause. A ship's master upon the high seas has the right by law to jettison a cargo in the extremity of danger. The loss in such case does not fall upon the master of the ship or the ship's owners, but on the owners of the cargo primarily. They, however, are entitled to a pro rata contribution from the several persons interested in the ship, freight and cargo by the doctrine of general average, though there are exceptions to this rule when the cargo is carried on the deck. When the cargo jettisoned is insured the insurer receives the average.

Jetty (jet'i), a kind of pier or artificial projection of stone, brick, wood, or other material, affording a convenient place for landing from and discharging vessels or boats, or serving as a protection from the violence of the waves; or a jetty may be built out from the bank of a stream obliquely to its course, and employed either to direct a current on an obstruction to be removed, as a bed of sand or gravel, or to deflect it from the bank which it tends to undermine or otherwise injure. In this last sense jetties have been successfully used to deepen river mouths or retard the advance of a bar, as at the mouths of the Mississippi, the Columbia, the Maas, the Danube, the Vistula, and other rivers. The jetties at Galveston harbor, Texas, extend about 6½ miles from the island to the outer bar, and are the longest in the world. The Mississippi jetties are composed of brush, woven into wooden frames. Flimsy as they seem, they have been very durable and successful in deepening the channel. Many harbors, such as Calais, Ostend, etc., depend on jetties for their existence.

Jeux Floraux (shœ flō-rō; Floral Games), a poetic contest and festival annually celebrated in Toulouse, and having its origin in a poetical college, Collége du gai Savoir, founded in 1323 by seven troubadours. Its annual fête is still celebrated, and a volume of the competition pieces is published yearly.

Jevons (jev'ons), WILLIAM STANLEY, an English writer on logic and political economy, born at Liverpool in 1835. He was educated at University College, London; held an appointment in the royal mint in Australia from 1854 to 1859; was graduated at London University in 1862; was appointed professor of logic, mental and moral philosophy, and Cobden lecturer on political economy in Owens College, Manchester, afterwards professor of political economy in University College, London, a post which he resigned in 1881. Among his works are *Elementary Treatise on Logic* (1870), *Theory of Political Economy* (1871), *Principles of Science* (1874), and many essays and addresses on economic questions. Those entitled the *Coal Question*, the *Value of Gold*, *Money* and the *Mechanism of Exchange*, may be specially mentioned. He was drowned while bathing in 1882.

Jew-bush, a plant of the nat. order *Pedilanthus tithymaloides*, Euphorbiaceæ. It grows in the West Indies, and is used in decoction as an antisyphilitic, and in cases of suppression of the menses. It is also called *Milk-plant*.

Jewell (jō'el), JOHN, Bishop of Salisbury, born in 1522; died in 1571. He was educated at Oxford, embraced the principles of the Reformation, and contributed greatly both by his work as a college tutor and by his sermons and writings to the progress of Protestantism. On the accession of Mary he at first temporized to avoid persecution, but finally in 1554 escaped to Frankfort. On the accession of Elizabeth in 1558 he returned to England, took part in all the measures for the thorough establishment of Protestantism, and became Bishop of Salisbury in 1560. He is famous for his many controversial writ-

ings, among which his *Defence of the Church of England*, or *Apologia Ecclesiæ* (1562), written in elegant Latin, is notable.

Jew-fish, the name given to two species of large fishes well known in American waters. The one known also as the guasa or black grouper (*Promiorope itaira*) sometimes reaches the weight of seven hundred pounds; the other (*Stereolëpis gigas*) inhabits particularly the Californian coast, often weighs five hundred pounds, and has flesh of excellent quality.

Jewish Era. See *Epoch* and *Calendar*.

Jews (Jōz), a Semitic race of people also known as Hebrews and Israelites, and whose early history is identified with that of Palestine or the Holy Land. The main authority for the early history of this people is the Old Testament. But the chronology is obscure and difficult to be memorize. Jewish history may be considered as beginning with the emigration of the patriarch Abraham, ancestor of the race, from Ur of the Chaldees, probably about 2000 B.C. Abraham removed to the southern part of Palestine, where we find his descendants flourishing when they were led to emigrate to Goshen, in Egypt. The interval is filled up with the history of the patriarchs, Abraham, Isaac and Jacob (which see). Joseph, a son of Jacob, had become viceroy of Egypt, and his father and brothers were received with high favor by the Pharaoh who then ruled in this country. But in course of time the condition of the Israelites, under the rule of the Pharaohs, changed for the worse. They were treated as bondmen, and forced labor was exacted of them in an unreasonable degree. According to some authorities the Pharaoh who began to oppress the Israelites was Rameses II. and their deliverance took place under his son. (See *Egypt*.) It was perhaps about 1320 B.C., others say 1491 B.C., that a deliverer in the person of Moses led the Israelites out of the land of bondage, where they had resided for some 400 years. By this time they formed a large community, divided into twelve tribes, named respectively after Reuben, Simeon, Judah, Issachar, Zebulun, Benjamin, Dan, Naphtali, Gad and Asher, sons of Jacob, and Manasseh and Ephraim, sons of Joseph. Under the leadership of Moses they went into the wilderness, and through him received the law of the Ten Commandments on Mount Sinai and the whole policy by which they were to be governed as a people. A ceremonial of sacrifice was instituted, and Aaron, the elder brother of Moses, and his sons consecrated as a hereditary priesthood, the priestly functions thus falling to the tribe of Levi. The nation was established as a theocracy, and this principle, however, often forgotten in times of repose, continued henceforward to be the inspiring idea of national unity throughout the frequent crises of Jewish history. The emigrants first settled at Kadesh on the southern borders of Palestine, where they remained for many years, this being the period spoken of in the Scriptures as the forty years' wandering in the wilderness. They now marched northward to find new settlements in Palestine, which they had to wrest by force from the Canaanites. Moses died before entering the promised land, and was succeeded as leader by Joshua, under whom the Israelites advanced to the conquest of the territories of the Canaanites west of Jordan. The former inhabitants, however, were not entirely subjugated, but retained possession of a number of cities, and the twelve tribes settled in districts which were more or less cut off from one another, and which formed an exceedingly loose union of small states under the tribal chiefs, at times hard pressed by neighboring peoples. It was only long after, and by a gradual process of absorption, that the Canaanite territories and their inhabitants became amalgamated with the Israelites.

After the death of Joshua, about 1220, or according to another chronology 1427 B.C., a succession of judges or military leaders arose. Among the more remarkable of these judges were Barak, Deborah the prophetess, Gideon, Jephthah, Samson and Samuel. About 1070 the Philistines, who inhabited the coast and the low-lying plains west of the mountains of Judah, had defeated the Israelites and subjugated part of the country when Samuel, the 'last judge in Israel,' was inspired to declare to Saul, a Benjamite, his destiny to become king, and anointed him as such. Saul soon proved his fitness for the post by his successful leadership of the Israelites, and he continued to organise the forces of Israel, and to fight with varying success against their enemies till his disastrous defeat and death at Mount Gilboa, after which the power of the Philistines again predominated on the west side of Jordan. On the other side of the river the military skill of Abner still preserved a kingdom for Saul's son, Ishbosheth, and gradually reasserted with some success his authority in Ephraim and Benjamin. But in Judah David, a native of Bethlehem, a warrior whom Saul's jealousy had driven into exile and alliance with the Philistines,

and who had previously been anointed king in place of Saul, established a separate principality, the capital of which was at Hebron. For seven years a hot war was waged between the two Hebrew states, and ended only with the murder of Abner and Ishbosheth, when all the tribes acknowledged David as King. David now transferred his residence from Hebron to Jebus, a fortified city which he wrested from the Canaanites, and called the city of David, afterwards Jerusalem. He assailed and subdued the Philistines, Moabites, Edomites, Ammonites, and other surrounding nations, till all the country from the N. E. end of the Red Sea to Damascus acknowledged his authority. To this prosperous kingdom succeeded his son Solomon (B.C. 993, or by the long chronology 1015). His reign, owing to the warlike reputation which the nation had acquired under David, was entirely peaceful. He had no military tendencies, but he took great pains to arrange the administration of the kingdom in an orderly way, and his wisdom as a ruler and judge became proverbial. His alliances with Tyre and Egypt enabled him to carry on an extensive and lucrative commerce. He built the celebrated temple in Jerusalem, and extended and improved the city. His harem contained 700 wives, spoken of as princesses, besides 300 concubines. But with these, and with the extended commerce of the kingdom, it was inevitable that foreign elements should be introduced into the Jewish national life. Thus Solomon erected altars for the deities and the worship of the Moabites, the Ammonites, the Sidonians and other nations; and the severe simplicity of old Hebrew manners gave place to luxury and craft.

The splendor of Solomon's reign had entailed heavy exactions upon his people. When Rehoboam, Solomon's son, succeeded, they came with Jeroboam at their head and demanded that he should make their yoke lighter. Rehoboam answered scornfully, whereupon ten tribes revolted and set up Jeroboam as king of a separate kingdom of Israel, with its capital first at Sichem, later at Samaria. Judah, along with a part of Benjamin and the tribe of the Levites, remained loyal to the dynasty of David. After an unsuccessful attempt to reconquer the kingdom of Israel, Rehoboam was forced by an invasion of Shishak of Egypt to give up the hope of uniting the two kingdoms. In the next generation things had changed so much that Asa, king of Judah, was obliged to seek the help of Benhadad of Syria against King Baasha of Israel. Baasha was succeeded by Elah, Elah by Zimri and Zimri by Omri, under whom the kingdom of Israel seems to have grown powerful. Omri established the capital of the kingdom at Samaria (about 906 B.C.), and subjugated the Moabites. The son of Omri, Ahab, married Jezebel, princess of Tyre, an event which led to the extension of Phœnician idolatry in Israel. As Solomon had done before, Ahab built a temple for the Syrian Baal in his capital. In his reign and subsequently the great prophets Elijah and Elisha played an important part. Ahab was slain at Ramoth-Gilead in battle against the Syrians. He was succeeded by Ahaziah (853-851), and Joram (851-843). The latter was slain by Jehu, a captain of the army, who had been anointed king by command of Elisha. Jehu (843-815) now made a clearance in Samaria of Syrian idolatries, destroying the temple of Baal and putting the priests to death. Under Jeroboam II, fourth in the line of Jehu, the kingdom reached a high point of prosperity (790-749). After Jeroboam's death there was a quick succession of kings, Zachariah, Shallum, Menahem, Pekahiah, Pekah; none of any significance. Under Pekah the kingdom of Israel became tributary to the Assyrians. (See *Assyria*.) Hosea, Pekah's successor, made an ineffectual attempt to free the country from the Assyrian yoke; but finally, in 722, Samaria was captured by the Assyrian king, Sargon, the kingdom of Israel virtually destroyed, and the chief inhabitants carried away and settled in Assyria and Media.

Generally, while the kingdom of Israel had been flourishing, that of Judah had stood in the background. Rehoboam was succeeded by Abijam, Asa, Jehoshaphat, the last a powerful and fortunate king. In the hope of putting an end to the war with the kingdom of Israel, Jehoshaphat married his son Jehoram (848-844) to Athaliah, the daughter of Ahab of Israel. After the murder of her son Ahaziah by Jehu, Athaliah seized the supreme power in Jerusalem, and put to death her own grandchildren in order to destroy the line of David, Joash alone being miraculously rescued. Athaliah was overthrown and put to death and the young Joash raised to the throne (837-797). His successors were: Amaziah (797-792), Uzziah (792-740), Jotham, Ahaz and Hezekiah (727-699). Under Ahaz and Hezekiah Isaiah delivered his sublime prophecies. Hezekiah was one of the greatest reforming kings: his influence extended widely over the kingdom of Israel, now in extreme decline. He was miraculously delivered from an invasion of Sennacherib, king of

Assyria, by the destruction of the Assyrian army. (See *Assyria.*) Josiah (641-610 was the last of the pious kings of Judah. He was killed in battle against Necho, king of Egypt. After him there was an uninterrupted succession of weak and incapable monarchs, till under Zedekiah (599-588) the capture of Jerusalem by Nebuchadnezzar, B.C. 588, put an end to the monarchy, Jerusalem being destroyed and many of the people being carried captive to Babylon. The prophet Jeremiah flourished from the reign of Josiah to the captivity.

In 538 Babylon was taken by Cyrus, king of Persia, who restored the Jews and appointed Zerubbabel governor of Judæa, as a Persian province. The great majority of the Jews remained in Persia, however, only about 42,000 returning and settling chiefly in the vicinity of Jerusalem. About 458 a second return of exiles was led from Persia by Ezra. Along with Nehemiah, who had been appointed Persian governor of Judæa, Ezra promulgated the new law-book, practically identical with the *Pentateuch.* From the time of Nehemiah to the fall of the Persian empire the Jews continued to live in peace as Persian subjects, but enjoying their own institutions. When Alexander the Great overthrew the Persian empire the Jews readily submitted on being promised the free exercise of their religion (B.C. 332). After the division of Alexander's empire Palestine was long a possession of the Ptolemies of Egypt, under whom it enjoyed a period of tranquillity. It was under the patronage of Ptolemy Philadelphus (reigned B.C. 285-247), according to tradition, that the Septuagint or Greek version of the Old Testament Scriptures was made. After the death of Ptolemy Philopator Antiochus the Great of Syria became master of Palestine (B.C. 198). An Egyptian and a Syrian party now arose among the Jews, and gave occasion to civil dissensions, which led Antiochus IV (Epiphanes) to invade Judea (B.C. 170), when he took Jerusalem by storm and slaughtered the inhabitants without distinction of age or sex, and endeavored to compel the Jews to give up their religion. At length, under the leadership of the Maccabees or Asmonæan family, resistance arose, and after a struggle of nearly fourteen years was successful. In 135 B.C. John Hyrcanus, son of Simon, a brother of Judas Maccabæus, completed the independence of Judæa, and extended his dominion over the ancient limits of the Holy Land. During his reign the rival sects of the Pharisees and Sadducees became established. Aristobulus I, the son of Hyrcanus, assumed the title of king, which was held by his successors. In B.C. 63 Pompey, called in to help the Pharisees, took Jerusalem, and made the Jews tributary to the Romans. Subsequently Herod the Great, who entirely threw off the Jewish manners and cultivated the favor of the Romans, was recognized as King of Judæa by the Roman senate. It was B.C. 4, the last year of his reign, that the birth of Christ took place at Bethlehem. In 6 A.D. Judæa and Samaria became a Roman province under a procurator, who had his seat at Cæsarea, and was subordinate to the prefect of Syria. Pontius Pilate, under whom our Lord's public ministry and crucifixion occurred, was made procurator A.D. 26. For a time the country was again ruled by a king, Herod Agrippa, A.D. 41-44. He persecuted the Christians and put the Apostle James to death. In A.D. 65 a party of the Jews revolted from the Roman yoke and roused the whole of Palestine to insurrection. Vespasian was sent by Nero to suppress it, but before the war was finished he was called to the empire and left his son Titus to conclude it. The result was the capture and destruction of Jerusalem, A.D. 70, an event that deprived the Jews of the center of unity to which their national life had hitherto clung. After an insurrection headed by Bar-Cochba, 132-135, Hadrian completely razed to the ground the remains of Jerusalem left by Titus, and erected in their place a Gentile city, with the title Ælia Capitolina. Jews were then forbidden to enter this city on pain of death, and the name of Jerusalem was not revived for it till the time of Constantine. See *Jerusalem.*

Thenceforth the Jews became more and more a scattered people, without a country they could call their own. Under the Roman emperors their treatment varied. Under the Emperor Julian they ventured to make preparations for a new temple in Jerusalem. Although this attempt failed, they derived great advantages from their patriarchates (presidencies of the sanhedrim), which were established—one at Tiberias for the Western Jews (429); the other for the Jews beyond the Euphrates, latterly at Bagdad. These two patriarchates became points of union, and flourishing Jewish academies arose in the East to serve as seminaries for their learned rabbis. One of the works of these scholars was the collection of the traditionary expositions of the Old Testament, and additions to it, which was completed A.D. 500, and received, under the name of the *Talmud*, as a rule of

faith by the scattered communities of Jews. (See *Talmud.*) In time the scattered Jews made themselves masters of the commerce of the Old World, and, as money-lenders and brokers, were often of great importance to princes and nobles. Even during the dreadful persecutions which they underwent from the cruelty of the Christians they still continued prosperous in Christian countries. They lived more happily, however, among the Mohammedans, although they were distinguished by dishonorable badges and oppressed by heavy taxes; and during the Moorish supremacy in Spain their prosperity was great and their learning flourishing. In the cities of France, Germany and Italy, after the eleventh century, particular streets and inclosed places were assigned to them as a sort of outcasts, in consequence of which, in the persecutions during the Crusades, thousands often fell victims at once to the popular fury. They were generally pronounced incapable of civil rights and public offices. In Spain and Portugal during the fifteenth century they yielded to force, and multitudes suffered themselves to be baptized, many were put to death by the Inquisition, and at last they were banished from the peninsula. It was only in the end of the last century that the Jews began to be put on a level with other citizens, France leading the way after the Revolution, and Prussia, following (1811). After repeated unsuccessful attempts to procure their admission into the British Parliament the object was at last effected in 1858. Anti-Semitic movements have resulted in the oppression of Jews in many countries, notably in Russia under the Czars. The most remarkable circumstance connected with the modern Jews is the tenacity with which they cling to their ancient religion and the purity in which on the whole they have retained their characteristics in the midst of alien peoples. The capture of Jerusalem from the Turks during the European war gave fresh impetus to the idea of re-founding a national Jewish state. (See *Zionism.*) The total number of Jews throughout the world is estimated at 13,000,000; of which over 6,000,000 were under the government of Czarist Russia, over 3,000,000 were in the United States; 1,313,687 in Austria; 1,675,666 in Poland. In New York City alone there were 1,450,000 Jews in 1918. See also *Hebrew Language* and *Literature.*

Jew's-Harp, a toy musical instrument held between the teeth, which gives a sound by the motion of a tongue of steel, which, being struck by the hand, vibrates against the breath. Called also *Jews' Trump,* or simply *Trump.*

Jeypore. See *Jaipur.*

Jezreel (jez'rēl), a city of Palestine, chosen by Ahab, king of Israel, as his chief residence.

Jezreelites (jez'rēl-its), a religious sect founded by James Jershom Jezreel, his real name being James White, who died in 1885. The revelations which he pretended to have received were contained in *The Flying Roll,* which represent the Jezreelites as being animated by the just spirits who withstood Satan at his rebellion in heaven, and who shall enjoy a greater state of bliss than Gentile Christians, who have the spirits which, though not rebellious, did not actively withstand Satan. The headquarters of the sect are at Gillingham, Kent.

Jháláwár (jä'lä-wär), an Indian native State in Rājputāna; area, 2694 sq. miles; pop. 340,488. Capital, Jhaira Pātan, or Pātan; pop. 23,000.

Jhang (jung), a town of Hindustan, in the Punjab, about 3 miles from the Chenab. Pop. (with adjoining Maghiana) (1901) 24,382.—Jhang district has an area of 5702 sq. miles; pop. 378,695.

Jhansi (jhän'sē), a fortified town in Hindustan, in Gwalior state, Central India Agency; pleasantly situated amid tanks and groves of fine timber trees. Within the town stands the fort on a rock. Pop. 55,724.

Jhelum (jhā'lem), JHILAM (jhē'lem) (anciently *Hydaspes*), a river of India, the most westerly of the five great rivers that intersect the Punjab. It rises in Cashmere, flows south, forming the boundary between Cashmere and the Punjab, then southwest through the Punjab, and finally falls into the Chenab. Its whole course is about 450 miles, and it is navigable for the flat-bottomed boats of the country from its junction with the Chenab up nearly to its emergence from the mountains.—There is a town of same name on the right bank of the river, with military cantonments. Pop. 21,107.

Jib, a triangular fore-and-aft sail extended on a stay stretching from a bowsprit or jib-boom to a mast, the *jib-boom* being a continuation of the bowsprit by a spar run out from the extremity of it.

Jiddah (jid'da), or JEDDAH, one of the chief trading ports of Arabia, on the Red Sea, 60 miles west of Mecca, of which it is the port. It has a considerable trade, and thousands of

pilgrims arrive here annually on the way to Mecca. Pop. about 30,000.

Jig, a light quick tune or air in 3-4, 3-8, 6-4, 6-8, 9-4, 9-8 or 12-8 time, to be found in the sonatas or suites of Corelli, Handel, and other composers till the middle of the eighteenth century.

Jigger (jig'ĕr), CHIGOE or SAND-FLEA, a parasitic insect native to tropical America, but now found in the southern and southwestern sections of the United States. The jigger attacks man, and while the male does not differ from other fleas, the female buries the anterior part of her body in the skin and becomes enormously distended with eggs. The place of attack is usually the skin beneath the toes, so that persons who go barefoot are liable to fall victims. The treatment is the removal of the parasite, taking care to leave no eggs or young behind, as these cause extensive ulceration.

Jig-saw, a fine narrow saw set vertically in a frame, and worked by a treadle. It is used for cutting curved or irregular lines.

Jim-crow, an implement for bending and straightening rails. Also a metal planing-machine, with a reversing tool adapting it to plane both ways. The term originated in an old negro song, and became a typical term for a negro, from which the cars set aside for negroes in railroad trains are called Jim-crow cars.

Jimena de la Frontera (hi-mā'nä) a town of Spain, in Andalusia, 46 miles E. of Cadiz. Pop. 7549.

Jingo (jin'gō), a word of unknown derivation, supposed to be a corrupted form of Jainko, the Basque name for the Supreme Being. It was first used as a political term in the Russo-Turkish war of 1877-1878, applied to politicians who urged on Disraeli, then Prime Minister of England, the necessity of taking sides with the Turks. Since that time the word has been used in both the United States and Europe to designate one who advocates a spirited and aggressive foreign policy.

Jinn (jin), JINNEE being the singular, in Mohammedan mythology, a race of genii, angels, or demons. Some are good and obedient to the will of God; others are disobedient and malignant. They can at will become visible or invisible, or assume animal shape.

Jinrikisha, a light two-wheeled carriage, resembling a gig, drawn by one or more human runners between the shafts, universally used in Japan, and introduced into China and elsewhere.

Jitomir (jit'o-mir), or ZHITOMIR, a town of Russia, capital of the government of Volhynia, on the left bank of the Teterew, 80 miles W. of Kiev. Pop. 65,422.

Joachimsthal (yo'a-kims-tāl), a town of Bohemia, in a valley of the Erzgebirge, near the frontiers of Saxony, 70 miles W. N. W. of Prague. It depends chiefly on its valuable lead and silver mines. *Thaler* pieces derived their name from being first coined here. Pop. 7378.

Joan (jō'an), the female pope, according to a story long believed, but now acknowledged to be a fiction, was said to have been a native of Mainz, who, falling in love with an Englishman at Fulda, traveled with him in man's attire, studied at Athens, and visited Rome. Under the name of Johannes Anglicus she rose by her talents from the station of a notary till she was elected to the papal chair, under the name of John VIII (854 to 856, between Leo IV and Benedict III). She governed well, but having become pregnant she was delivered in a solemn procession, and died on the spot.

Joan'nina. See *Janina.*

Joan of Arc (*Jeanne d'Arc*—properly *Darc*), the Maid of Orleans, a heroine in French and English history, was born in the village of Domrémy, in Champagne, now department of the Vosges, in 1412. While she was still a young girl she began to be deeply affected by the woes of her country, much of which was conquered by the English, leaving only a small portion to the French king, Charles VII. In 1429 Orleans was being besieged by the English, and its fall would have ruined the cause of Charles. At this time Joan, who had been noted for her solitary meditations and pious enthusiasm, began, as she declared, to see visions and hear angelic voices, which ultimately called upon her to take up arms for Charles, to raise the siege of Orleans, and conduct Charles to Rheims to be crowned. At first she was regarded as insane, but eventually she found her way to the king and his councilors, and having persuaded them of her sincerity, received permission to hasten with Dunois to the deliverance of Orleans. In male dress, fully armed, she bore the sword and the sacred banner, as the signal of victory, at the head of the army. The first enterprise was successful. With 10,000 men she marched from Blois, and on April 29, 1429, entered Orleans with supplies. By bold sallies, to which she animated the be-

sieged, the English were forced from their intrenchments, and Suffolk abandoned the siege (May 8, 1429). Other successes followed; Charles entered Rheims in triumph; and at the anointing and coronation of the king, July 17, Joan stood at his side. She was wounded in the attack on Paris, where Bedford repulsed the French troops, but continued to take part in the war till May 25, 1430, when she was taken prisoner by the Burgundians, and sold to the English. She was taken to Rouen, and after a long trial, accompanied with many shameful circumstances, condemned to death by the judges as a sorceress. On submitting to the church, however, and declaring her revelations to be the work of Satan, her punishment was commuted to perpetual imprisonment. But pretexts were soon found to treat her as a relapsed criminal, and as such she was burned at Rouen, May 30, 1431, and her ashes were thrown into the Seine. She died with undaunted fortitude. Twenty-five years after, a court constituted by Pope Calixtus III to examine the charges against the Maid of Orleans, pronounced her innocent. Voltaire, in a notorious burlesque, Southey, Schiller, and others have made her the subject of their verse. Schiller's drama still remains the worthiest literary monument of her fame. Since 1875 there has been a movement toward a canonization of this remarkable woman, and this led in 1909 to her being placed among the saints of the Roman Catholic Church, a just but belated tribute to her noble character.

Job (jōb), the hero of an ancient Hebrew poem, which forms one of the books of the Old Testament. Job, an upright man, with a family of seven sons and three daughters, with large herds and numerous servants, is suddenly, with the permission of Jehovah and by the agency of Satan, deprived of his possessions and his children, and smitten with a sore disease, yet submits patiently to the divine will. Three friends come to console him, and a large part of the poem is occupied with the speeches of his friends, who attribute his misfortunes to wickedness and hypocrisy, and his replies to them, until near the close, when God himself is introduced answering Job out of a whirlwind. In the sequel Job is delivered from his calamities, lives 140 years, becomes richer than he had been before, and begets seven sons and three daughters. The design of the book seems to be to enlarge men's views of the providence of God. It was probably written between the seventh and the fifth centuries B.C., and is certainly not earlier than the time of David. The authorship of the story is unknown.

Jockey Club, a club for the regulation of horse-racing.

Jodhpur (jōd-pōr'), or MARWAR, a town of Hindustan, capital of the state of Jodhpur. The city has many handsome buildings, and is surrounded by a strong wall with seventy gates. Pop. 60,400.—The state of Jodhpur is the largest in Rajputāna, having an area of 35,000 sq. miles; it is well watered by the Luni and its affluents. Pop. 1,085,565.

Joel (jō'el), one of the twelve minor prophets. Nothing is known of his life. He is generally supposed to have been contemporaneous with Hosea and Amos. The immediate occasion of his prophecy was a protracted drought and a visitation of locusts and other destructive vermin, but it expands in a style of high sublimity into predictions of future prosperity when the divine judgments should have purified the nation. Joel is quoted by St. Peter, Acts ii, 16-21.

Joffre (zhŏfr), GENERAL JOSEPH JACQUES CÉSAIRE, a French soldier, born at Rivesaltes, a small town in the Pyrenees, Jan. 4, 1852. He was educated at the College of Perpignan and the Ecole Polytechnic, Paris. He joined the French army as 2nd lieutenant during the Franco-Prussian War (1870-71) and rendered distinguished services in the Formosa and Tonkin-China campaigns in 1885; and in the Sudan, 1892-94; and in Madagascar in 1892, rising to the rank of general of Division. In 1913 he was made chief of the general staff of the French army. On the outbreak of the European War (q.v.) he took command in the field and won the brilliant battle of the Marne, stopping the German advance on Paris. In December, 1915, all the French armies in Europe were put under his command. In December, 1916, he was relieved from active service and in 1917 headed the French Commission to the United States to discuss American participation in the war.

Jogues (zhog), ISAAC, a Jesuit missionary in North America, a native of Orleans, France. After laboring in Michigan, he visited the Mohawks in 1642, was tortured and mutilated, but escaped. Returning in 1646, he discovered Lake George (called by him Holy Sacrament), and was again tortured and murdered by the fierce savages.

Johannesburg (yō-hăn'nes-bĕrg), a city in Transvaal, Union of S. Africa, the central point of the gold-fields of the district stretching southwest from Pretoria to Potchefstrom, and known as the Witwatersrand. The

streets and squares of the town are well laid out, and the buildings solid and substantial. The white population is mainly English. Pop. (1911) 237,200.

John, one of the apostles, often distinguished as *St. John the Evangelist*, the reputed author of the fourth Gospel, three epistles, and the Revelation, was the son of Zebedee and Salome, and the brother of James. Previous to his call by Jesus he was a fisherman on the Sea of Galilee, together with his father, his brother, and Simon Peter and Andrew, who were his partners. John, together with Peter and James, was admitted to a more confidential intercourse with Jesus than the other apostles, and he is repeatedly spoken of as 'the disciple whom Jesus loved.' His Gospel was written later than any of the others —according to some critics to refute particular heresies, and contains fuller details of our Lord's conversation and discourses than the other Gospels, and is also more doctrinal in character. Of the three epistles the first has much resemblance to the Gospel; but the other two were considered doubtful even by the early fathers. As to the Revelation, see *Revelation*. After the death of Jesus John continued at Jerusalem, and we afterwards find him at Samaria (Acts iii, 14-25). Tradition handed down by the fathers makes him die at Ephesus, and if he wrote the Revelation he must have been banished to Patmos. The time of his death is unknown.

John, called the *Baptist*, the forerunner of Christ, was born six months before Jesus (their mothers were cousins), of a Levitical family in Judæa. He lived an austere life, given up to solitary meditations, till A.D. 26, when he began to preach in the deserts of Judæa, announcing that the kingdom of heaven was at hand, and proclaiming himself the harbinger of the Messiah. He baptized many converts, and testified to the higher mission of Jesus at the time of his baptism in the Jordan. To gratify a vindictive woman, Herod Antipas, tetrarch of Galilee, caused him to be beheaded in prison. But for long afterwards his disciples continued to form a separate body, and are said to have established the still existing sect of Sabians or St. John Christians, in Persia, distinguished for their veneration of John the Baptist.

John, the name of twenty-three popes, among whom are the following: —JOHN I (*St. John*), pope in 523-526. Theodoric sent him to Constantinople, to induce the Emperor Justin to adopt milder measures towards the Arians, and on his returning without success Theodoric threw him into prison, where he died.—JOHN XII succeeded Pope Agapetus II in 956, when only eighteen years old. He was the first pope who changed his name on his accession to the papal dignity. His life was so licentious and disorderly that the Emperor Otho had him deposed by a council in 963, and Leo VIII elected in his stead. But on Otho's departure John returned to the city with a strong body of followers and drove out Leo. He died in 964.—JOHN XXII, a native of Cahors, was elected pope at Lyons in 1316, after the death of Clement. He resided at Avignon, and took an active part in the disputes of the emperors Louis of Bavaria and Frederick of Austria. He died in 1334.—JOHN XXIII (*Balthasar Cossa*), born in Naples, was a pirate in his youth, afterwards studied at Bologna, and was elected pope in 1410, by the Council of Pisa, after the death of Alexander V, on condition that, if Gregory XII and Benedict XIII would resign, he would also retire to end the schism. He summoned the Council of Constance, demanded by the Emperor Sigismundi, in 1415, and was deposed by this council as guilty of a long list of heinous crimes. For some years he remained in custody, but was ultimately pardoned by Pope Martin V, and made a cardinal. He died in 1419.

John, King of England, born in 1166, was the youngest son of Henry II, by Eleanor of Guienne. Being left without any particular provision, he got the name of *Sans Terre*, or Lackland; but his brother, Richard I, on his accession, conferred large possessions on him. Despite this, he tried to seize the crown during Richard's imprisonment in Austria. He obtained the crown on the death of Richard in 1199, although the French provinces of Anjou, Touraine and Maine declared for his nephew, Arthur of Brittany, who was lineally the rightful heir, then with the King of France. A war ensued, in which John recovered the revolted provinces and received homage from Arthur. In 1201 some disturbances again broke out in France, and the young Arthur, who had joined the malcontents, was captured and confined in the castle of Falaise, and afterwards in that of Rouen, and never heard of more. John was universally suspected of his nephew's death and the States of Brittany summoned him before his liege lord Philip to answer the charge of murder, and in the war which followed, John lost Normandy, Anjou, Maine and Touraine. In 1205 his great quarrel with the pope began regarding the election to the see of Canterbury, to which the pope had nominated

Stephen Langton. The result was that Innocent III laid the whole kingdom under an interdict, and in 1211 issued a bull deposing John. Philip of France was commissioned to execute the decree, and was already preparing an expedition when John made abject submission to the pope, even agreeing to hold his kingdom as a vassal of the pope (1213). John's arbitrary proceedings led to a rising of his nobles, and he was compelled to sign the Magna Charta, or Great Charter, June 15, 1215. But John did not mean to keep the agreement, and, obtaining a bull from the pope annulling the charter, he raised an army of mercenaries and commenced war. The barons, in despair, offered the crown of England to the dauphin Louis, who accordingly landed at Sandwich, May 30, 1216, and was received as lawful sovereign. The issue was still doubtful when John was taken ill and died at Newark, October, 1216, in the forty-ninth year of his age.

John II, King of France (1319-64), surnamed the *Good*, was a monarch distinguished alike for his incapacity and his misfortunes. In 1356 he was defeated and taken prisoner by the Black Prince at the battle of Poitiers, and was detained at Bordeaux and at London till released at a heavy expense to his country by the Peace of Brétigny in 1360. But on learning that his son, the duke of Anjou, who had been left as hostage in England, had effected his escape, he returned to London, where he died in 1364.

John III (*Sobieski*), King of Poland, son of Mark Sobieski, a Polish captain, was born at Olesko, in Galicia, 1624. Served in the French army, returned to Poland to repel the Russians in 1648, and greatly distinguished himself in several campaigns against Cossacks, Tatars and Turks, especially by his defeat of the last in the great battle of Choczim in 1673. The year after, on the death of Michael Corybut, he was chosen king. His most celebrated achievement was the relief of Vienna, besieged by a great army of Turks, whom he decisively defeated Sept. 12, 1683. His last years were disturbed by the intrigues of his own family and the anarchy of the country, which he was unable to control, and in which he foresaw its approaching downfall. He died June 17, 1696.

John, Knights of St., or Knights Hospitallers of St. John, afterwards called *Knights of Rhodes*, and finally *Knights of Malta*, were a celebrated religious order, originating in a monastery founded at Jerusalem in 1048 by some merchants from Amalfi. The monastery was dedicated to St. John the Baptist, and the monks, who were called Brothers of St. John or Hospitallers, had the duty of caring for the poor and sick, and in general of assisting pilgrims. In 1118 the order was regularly instituted as a military order, with the duty, in addi-

Knight of St. John.

tion to their vows of chastity, obedience and poverty, of defending the church against infidels. The brethren were divided into three classes, knights, chaplains and serving brothers, these last having specially the duties of looking after the sick, and accompanying pilgrims. In 1291 the order was driven from Palestine by the conquests of the Saracens, and after holding Cyprus for a time they occupied Rhodes in 1309, from which they were ultimately driven by Sultan Soliman II in 1522. After that the knights retired to Candia and other places, but finally to Malta, which Charles V granted them in 1530. Here they continued to be a bulwark of Western Europe against the Turkish navies till modern times. The chief of this order, which had great possessions in almost every part of Europe, was called *Grand-master of the Holy Hospital of St. John of Jerusalem*, and *Guardian of the Army of Jesus Christ*. He was chosen by vote, and lived at Valetta, in the island of Malta. The Knights of St. John observed the rules of the order of St. Augustine. The Protestants, however, were not bound to celibacy. Every member was required to be of good family. The duty of each knight used to be to take the field at least three times against the infidels or the pirates of Barbary. In peace they wore a long black mantle and a gold cross of eight points, enameled white; in war they wore

a red jacket or tabard, charged with a white cross. In 1798 Malta was unexpectedly attacked and taken by Bonaparte, and about the same time the extensive properties belonging to the order in various countries were confiscated. It still exists nominally.

John Bull, a collective name, used in a sportive manner in order to designate the English people. It was first employed by Dean Swift. Its counterpart in the United States is Brother Jonathan (which see).

John Dory. See *Dory.*

John of Austria, commonly called DON JOHN OF AUSTRIA, the natural son of the emperor Charles V, was born at Ratisbon in 1545. In 1570 he conducted a campaign against the recalcitrant Moors of Granada with great vigor and relentlessness, and in the following year he commanded the allied fleet which won the great naval battle of Lepanto over the Turks (October 7, 1571). This was one of the greatest naval combats in history, and put an end to Mohammedan supremacy in the Mediterranean. In 1576 he was appointed governor of the Netherlands, and had just won along with the Prince of Parma the victory of Gembloux (1578) over William the Silent, when he died, not without suspicion of having been poisoned by his jealous half-brother, Philip II.

John of Gaunt, a corruption of *Ghent,* where he was born in 1339, was fourth son of Edward II and his queen Philippa, daughter of the Earl of Hainaut. He was created Duke of Lancaster in 1362; served in the French wars, and became governor of Guienne. He assumed in right of his wife the title of King of Castile, invaded the kingdom to assert his claims, but subsequently relinquished them in favor of Prince Henry of Castile, who had become his son-in-law. His eldest son, Bolingbroke, became king of England as Henry IV. He died February 3, 1399.

John of Leyden. See *Anabaptists.*

John o' Groat's House (popularly *Johnny Groat's House*), a house formerly situated about 1½ miles west of Duncansby Head, and forming about the most northern extremity of the mainland of Great Britain. According to legend, it was built in octagonal form, with eight doors, and contained an eight-sided table, to prevent disputes on precedence in the Groat family.

John's, EVE OF SAINT, a popular celebration of remote antiquity, held on the vigil or eve of the feast of the nativity of John the Baptist, June 24 (Midsummer Day). On the eve of the feast it was the custom in former times to kindle fires (called St. John's fires) upon hills in celebration of the summer solstice, and various superstitions were long practised on this occasion. The custom still lingers in some parts of Europe.

John's, ST. See *Saint John's.*

John's, ST., Antigua. See *Antigua.*

John Scotus. See *Erigena.*

Johns Hopkins University, one of the foremost universities of the United States, founded in 1876, in Baltimore, Maryland, by Johns Hopkins, a merchant of that city, and endowed by him with more than $3,000,000. Besides the library there are well-equipped laboratories for chemistry, biology, etc. There is an extensive teaching staff, and instruction is given to two grades of students, graduates and undergraduates. The former are such as have taken a degree here (that of B.A.) or elsewhere, and wish to carry their studies further, this university giving special attention to advanced studies of various kinds, as well as to original research. A number of periodicals are issued in connection with the university. There are, besides numerous scholarships, about twenty fellowships, each of the value of $500 annually. A hospital, also endowed by Johns Hopkins, is connected with this institution. Its present endowment amounts to more than $4,500,000.

Johnson (jon'son), ANDREW, seventeenth president of the United States, born in North Carolina in 1808; died in 1875. He was self-educated; entered Congress as a Democrat in 1842, and the Senate in 1857. In 1864 he was nominated as vice-president by the Republican party, and elected with Abraham Lincoln. He became president upon the assassination of Lincoln in April, 1865. During his term of office he was in constant conflict with the Senate and House of Representatives on account of his efforts to restore the Confederate States to their full former status without consultation with Congress. He was finally impeached by the House of high crimes and misdemeanors (February, 1868), and tried before the Senate, the trial ending in an acquittal, the requisite two-thirds major-

ity for conviction not being obtained. A general amnesty to the Confederates was his last presidential act. He was subsequently elected in Tennessee to the Senate by the Democratic party.

Johnson, EASTMAN, painter, was born at Lovell, Maine, in 1824; died in 1906. He devoted himself to portrait and genre subjects, two of his best-known works being *The Old Kentucky Home* and *The Husking Bee.*

Johnson, SIR GUY (1740-88), an American Tory and militia colonel, born in Ireland. He served in the French and Indian wars, and in 1774 succeeded his uncle, Sir William Johnson (q. v.), as superintendent of Indian affairs. After the Revolution he fled to Canada, and with Joseph Brant (q. v.) led the Mohawk Indians against the Americans.

Johnson, HIRAM WARREN (1866-), an American lawyer and senator, born at Sacramento, California; admitted to the bar in 1888. He became famous for his prosecution of graft in San Francisco, 1906-07, and secured the conviction of Abe Ruef for bribery. He was governor of California 1911-15, and was re-elected for term 1915-19, but resigned in 1917 to become United States Senator for term 1917-23. He was a nominee for vice-president on the Progressive ticket in 1912.

Johnson, SIR JOHN (1742-1830), an American Tory leader, son of Sir William Johnson (q. v.). He organized the loyalist corps known as the Royal Greens, and in July, 1777, joined St. Leger at Oswego, taking part in the siege of Fort Stanwix (q. v.) and at the battle of Oriskany (q. v.). He directed a series of Indian raids in northern and central New York which horrified the country. He was decisively beaten at Newtown (now Elmira) in 1779, and his property confiscated by the U. S. government.

Johnson, REVERDY, statesman, born at Annapolis, Maryland, in 1796; died in 1876. Admitted to the bar in 1815, he practiced law in Baltimore. He was elected by the Whig party to the United States Senate in 1845, and resigned in 1849, to become attorney-general in President Taylor's cabinet. He was senator again 1863-68, and Minister to England, 1868-69.

Johnson, RICHARD MENTOR, vice-president, was born near Louisville, Kentucky, in 1780; died in 1850. He studied law, was elected to Congress in 1807, and continued a member until 1812, when he raised a company of mounted riflemen and took an active part in the war. He aided greatly in Harrison's victory of October, 1813, and was dangerously wounded. He was elected to the Senate in 1819, returned to the House in 1829, chosen vice-president, under President Van Buren, in 1836. He was again the Democratic candidate for vice-president in 1840, but was defeated.

Johnson, RICHARD W., soldier, was born in Livingston county, Kentucky, in 1827, and was graduated at West Point in 1849. In 1862 he was made a major in the regular army, and as general of volunteers commanded a division at the battles of Stone River and Chickamauga. He served under Sherman in Georgia in 1864, took part in the battle of Nashville and commanded a division of cavalry in the pursuit of the Confederates. He died in 1897.

Johnson, ROSSITER, author, born at Rochester, New York, in 1840; was graduated at Rochester University in 1863. His works comprise *Phæton Rogers; Idler and Poet,* poem; *History of the War of 1812; History of the Old French War,* etc. He edited series of books and cyclopedias and was an associate editor of the *Standard Dictionary.*

Johnson, SAMUEL, an eminent English author, son of a bookseller, was born at Lichfield in 1709; died at London in 1784. He received his early education partly at the free school of Lichfield, and partly at Stourbridge, in Worcestershire. In 1728 he entered Pembroke College, Oxford, but was obliged by poverty to retire after three years without taking a degree. He became successively an usher in Leicestershire, a bookseller's drudge in Birmingham, and the head of a school established with some money he acquired by marrying, in 1736, Mrs. Porter, the widow of a mercer, considerably older than himself, but to whom he was sincerely attached. The school speedily failed; and in 1737, removing to London, Johnson entered on his long course of literary toil. His reputation rose very slowly; the greater part of his time was wasted for many years on desultory and occasional efforts. A large proportion of his writings appeared in the *Gentleman's Magazine,* or as pamphlets; and most of these are quite forgotten. His two poetical satires, *London* (1738) and *The Vanity of Human Wishes* (1749), are striking specimens of reflection and diction, but neither they nor his tragedy of *Irene* entitle him to be considered as a great poet. *Rasselas* (1759), written in a week to pay for his mother's funeral, is one of the most interesting and characteristic of his works. His two sets of periodical essays,

The Rambler (1750-52) and *The Idler* (1758-60), were at first coldly received, but on being collected and reprinted they became very popular. For eight years from 1747 Johnson's attention was chiefly engaged upon his *Dictionary of the English Language*, a work which appeared in 1755, and is highly honorable to the author in the circumstances in which it was produced, but is of little real philological value. The dictionary, though it raised his fame, added little to his worldly means; and Johnson lived in poverty till 1762, when he obtained, through Lord Bute, a pension of £300 a year. He was thenceforth in easy circumstances, and could enjoy without restraint the society of Burke, Reynolds, Gibbon, Garrick, Goldsmith, and others in the famous club which became a formidable power in the world of letters. In 1763 the first interview with his now equally famous biographer, James Boswell, took place. In 1765 began his intimacy with the family of Mr. Thrale, the great brewer, and in the same year appeared his long-promised edition of Shakespere. In 1773 Johnson made a tour to the Hebrides in company with his friend Boswell, of which he gives a highly instructive account in his *Journey to the Western Isles of Scotland*. In 1775 he received the diploma of D.C.L. from the University of Oxford, and soon after visited France in company with the Thrales. His last literary undertaking was his *Lives of the Poets*, which was completed in 1781. He was buried in Westminster Abbey. Boswell's *Life* may be said to convey a more favorable impression of Johnson's real strength, both in thought and language, than anything in the works which he wrote and published.

Johnson, Tom Loftin, reformer, was born at Georgetown, Kentucky, in 1854. He invented street railway devices, became the owner of several railways, and was an iron manufacturer in Cleveland, Ohio, of which city he was reform mayor, 1901-10. He was a prominent advocate of the 'single tax' theory and vigorously sought to establish three cent railway fares. In this he succeeded in Cleveland. He died April 1, 1911.

Johnson, Sir William, a British officer, born in Ireland in 1715; died in 1774. Migrating to America, he settled near the Mohawk River, New York, became a friend of the Indians, and was adopted as a sachem by the Mohawks. In 1755 he won an important victory over the French army at Fort George. For this the government presented him 100,000 acres of land in the Mohawk valley, where he built the village of Johnstown.

Johnson City, a town in Washington county, Tennessee, 28 miles s. s. w. of Bristol. It has iron works, wood-working mills, etc. Pop. 8502.

Johnston (jons'ton), Alexander Keith, geographer, was born near Edinburgh in 1804; died in 1871. His more important works were the *National Atlas*, first published in 1843; and his *Atlas of Physical Geography*, published in 1848, which gained him election to the leading geographical societies of Europe and America. Among his minor publications are an *Atlas of the Historical Geography of Europe*; and a *Dictionary of Geography* (better known as *Johnston's Gazetteer*).

Johnston, Albert Sidney, Confederate soldier, was born in Washington, Kentucky, in 1803. His services in the Black Hawk and Mexican wars were distinguished. On the outbreak of the Civil war he resigned with reluctance an important command to take part with his native South. In the battle of Shiloh, in which he commanded (April 6, 1862), Johnston received a mortal wound.

Johnston, Joseph E., Confederate soldier, was born in Longwood, Virginia, in 1809. He served in the Seminole Indian and Mexican wars. In the Civil war the victory of Bull Run was due to his reinforcement of Beauregard's army, and he was in command at Richmond until a wound at Fair Oaks compelled him to resign the command to General Lee. He was in the field against Grant at Vicksburg in 1863, but was too weak to save that city. He opposed Sherman's advance in 1864, and fought several battles, but was removed from his command, July 18. He was again opposed to Sherman in North Carolina in 1865, when the surrender of Lee ended the war. In 1877 he was elected to the United States Senate, and afterwards was made a commissioner of railroads. He died in 1891.

Johnstown (jons'town), a town in Cambria county, Pennsylvania, situated on the Conemaugh River, about 89 miles s. e. of Pittsburgh. It is the center of a flourishing manufacturing district, and the town and neighborhood in great part belong to the Cambria Steel Co., who are said to employ over 18,000 people in their steel mills. There are numerous other manufactories, and coal is largely produced in the vicinity. The town itself contained some 20,000 inhabitants, and along the Conemaugh River there was a total pop. of about

30,000, when, on May 31, 1889, this busy, thriving district was laid waste by the bursting of a dam at Conemaugh Lake, situated about 10 miles above the town. Houses, churches and factories were driven by the flood into a mass of ruin, which was finally piled up against the railway bridge at Johnstown, and its destruction completed by the outbreak of fire. Those who perished numbered about 2200. Pop. 55,482.

Johnstown, a city, capital of Fulton county, New York, 48 miles W. N. W. of Albany. Here gloves, mittens and shoe leather are largely manufactured. Pop. 10,447.

Joint-stock Companies, a species of partnerships in which a number of persons contribute funds or *stock* for the purpose of carrying on a trade or other profitable object. The management is vested in certain members called directors; and the general body of shareholders take no active part in the concerns of the company beyond exercising a control over the acts of the directors on special occasions. The capital is generally divided into equal shares, each member holding one or more, and in proportion to the number participates in the profits. After the stock of a company of this sort has been fully subscribed no one can enter it without previously purchasing one or more shares from some of the existing members. No member can demand payment of his share from the company, but he may, without consent of his fellow members, transfer his share to another person. In nearly all the States of this country joint-stock companies are now, by statute, invested with some of the privileges of corporations. Five or more persons associated for any lawful purpose may, by subscribing their names to a memorandum of association, form an incorporated company, with or without limited liability. The distinction between limited and unlimited liability companies is, that if an unlimited company contract any debts, no matter how large, every member is liable, if his fellow-members turn out unable to bear their proportions, to pay the whole of these debts to the extent of his fortune, whereas if the company is limited, each member can in no event be called upon to pay more than he expressly guaranteed. A company may be registered in one of three forms: 1, as a company limited by shares, where the liability of each member is limited to the amount unpaid on the shares; 2, as a company limited by guarantee, where the liability of each member is limited to such amount as he undertakes in the memorandum of association to contribute to the assets of the company if it should be wound up; and 3, an unlimited company, where there is no limit to the liability of the members. In the first two cases the word 'limited' must be added to the name of the company, and the amount of capital, object, place of business, and declaration of the limit or the amount of guarantee must be entered in the memorandum of association, which must be accompanied by articles of association providing for the management of the company. In Britain an annual list of members must be forwarded to the registrar of joint-stock companies, an official appointed by the Board of Trade; and there must be at least one office for registration in each of the three kingdoms. A general meeting of the company must be held at least once a year. A company may be wound up whenever it passes a special resolution to that effect; also whenever it does not commence business within a twelvemonth after incorporation, or if it suspends its business for a whole year; also whenever its members are reduced to less than seven; whenever it is unable to pay its debts; and lastly, whenever the court thinks it just and equitable that it should be wound up. Joint-stock companies are now common in all countries.

Joint-tenants, are those that hold lands or tenements, or other property, as goods and chattels, by one title, without partition. In a joint-tenancy the last survivor takes the whole, as if the estate had been given to him only, unless any of his companions have conveyed away their shares by deed.

Jointure (join'tŭr), in law, a provision for a wife to take effect on her husband's death.

Joinville (shwan-vēl), JEAN, SIEUR DE, a French historian, born in Champagne about 1224; died about 1317. He early entered the service of Thibaut, king of Navarre, and in 1248 raised a troop of nine knights and 700 armed soldiers, and accompanied Louis IX in his first crusade to the Holy Land. He rose high in favor with Louis, shared his captivity, returned with him to France in 1254, and spent much of his time at court. His *Histoire de St. Louis*, which is one of the most valuable literary productions of the middle ages, has been often reprinted.

Joists (joists), in carpentry, are the beams of timber to which the flooring of rooms and the laths of a ceiling are nailed, and which rest on the walls or girders, and sometimes on beds. They are laid horizontally, and in parallel equidistant rows.

Jokai (yō'kā-i), Mor, a Hungarian novelist, was born at Komorn in 1825. His first novel, *Working Days*, was published in 1845, after which he became a prolific and popular author, producing in all about 200 volumes of romances and novels, dramatic poems, humorous essays, etc. He died in 1904.

Joliba (jol'i-ba). See *Niger*.

Joliet (jō'li-et), a city, capital of Will County, Illinois, 37 miles s. w. of Chicago. It has an important state prison, large limestone quarries, and extensive manufactures, including large flour mills, machine shops, steel-works, breweries, rolling mills, horseshoe works, and many others. The barbed-wire plant is probably the largest in the world. The Des Plaines River affords water-power. Pop. 34,670.

Joliette, a manufacturing and trading town, Quebec, Canada, 40 miles N. E. of Montreal on the Canadian Pacific and C. N. Q. R. R. Pop. 7636.

Joliet (jō'li-et), Louis, a French-Canadian explorer, born at Quebec in 1645; died in 1700. In 1672, at the instance of Frontenac, governor of New France, he with six companions set out to explore the Mississippi. After much travel and adventure, descending the Wisconsin and Illinois rivers, they reached the Mississippi and finally made certain that it emptied into the Mexican Gulf. On his return journey, his maps and papers were lost in the Lachine rapids. He tried in vain to persuade the French government to colonize the Mississippi valley. Labrador was explored by him, and he was given the office of royal hydrographer. It is disputed that he was the first to explore the Mississippi.

Jomelli (yo-mel'lē), Niccolo, an Italian musical composer, born in 1714; died in 1774.

Jomini (zho-mi-nē), Henri, Baron, a distinguished soldier and military historian, born at Payerne, canton of Vaud, Switzerland, in 1779. He first served with the troops of his own country, but in 1804 joined the French army as colonel and aid to Marshal Ney, but after 1813 entered the Russian service. Some of his most important works are *Traités des Grandes Opérations Militaires; Principes de la Stratégie; Vie Politique et Militaire de Napoléon; Précis de l'Art de Guerre*, etc.

Jonah (Hebrew, signifying *dove*), one of the minor prophets, son of Amittai, and according to II Kings, xiv, 25, a contemporary of Jeroboam II, was born at Gath-Hepher, in Galilee. The book which bears his name is historical rather than prophetical, and the miraculous event of Jonah remaining three days and three nights in the belly of the fish has been regarded by some as an allegory. Orthodox theologians, however, are generally of opinion that the mention of it by Christ (Mat. xii. 39) obliges us to regard the event as really historical. Jonah's grave is shown at Mosul, the ancient Nineveh, and also at Gath.

Jones (jōnz), Inigo, the reviver of classical architecture in England in the beginning of the seventeenth century. He was born at London in 1572, and attracted the notice of the Earl of Pembroke, who sent him to Italy to study art. He went to Venice, where the works of Palladio inspired him with a taste for architecture. Having returned to England, he became court architect under James I and Charles I. Among his best-known works are the Banqueting House at Whitehall, Asburnham House, Covent Garden Piazza, Heriot's Hospital, Edinburgh and Shaftesbury House. Being a Roman Catholic and the partisan of royalty, he suffered heavy losses during the civil war, and died in poverty in 1652.

Jones, Jacob, naval officer, born near Smyrna, Delaware, in 1768; died in 1850. Joining the navy, he served in the war against Tripoli, was taken and held prisoner for 18 months. He is best known for his capture of the *Frolic* by the *Wasp* in 1812. Congress voted him a gold medal for his exploit.

Jones, John Paul, a famous naval commander, was born in Kirkcudbrightshire, Scotland, in 1747. His father, whose name was John Paul, was gardener to the Earl of Selkirk. He entered the merchant service, was engaged in the American and West Indian trade, and is said to have realized a handsome fortune. He settled in Virginia and on the outbreak of war between the colonies and mother country he offered his services to the former. After some service on the coast, in which he showed valor and ability, in 1778, being then in command of the *Ranger*, he crossed to the British seas and made a descent on Whitehaven, set fire to the shipping, and kept England and Scotland in constant alarm. In 1779, in command of the *Bon Homme Richard*, he threatened Leith, and captured the British vessel *Serapis* after a most desperate engagement off Flamborough Head. This has since been looked upon as one of the greatest of naval combats and Jones has been regarded as chief among American naval heroes. On his return to America, Congress voted him a splendid gold medal, with a resolution

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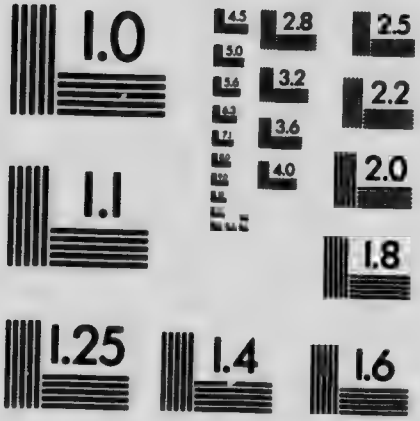

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commending his zeal, prudence and intrepidity. At the conclusion of peace Jones went to Paris as American agent for prize-money. In 1787 he entered the Russian navy as rear-admiral, and performed valuable service against the Turks. He died at Paris in 1792. His remains were discovered in that city in 1905 and brought to the United States, to be interred in the Naval Academy grounds at Annapolis.

Jones, OWEN, a British artist and decorator, born in 1809. He studied art under Lewis Vulliamy, and traveled in Italy, Turkey, Egypt and Spain. In the last-mentioned country he collected the materials for his great work on the Alhambra—*Plans, Sections and Details of the Alhambra*, completed in 1845. In 1842 Jones published his *Designs for Mosaic and Tesselated Pavements*, and in 1846 the *Polychromatic Ornament of Italy*. He was appointed a superintendent of the works for the Great Exhibition of 1851, and afterwards director of decorations at the Sydenham Crystal Palace, and had the special superintendence of the Egyptian, Greek, Roman and Alhambra Courts. In 1856 his *Grammar of Ornament* was published, and it still remains a text-book of examples, if not of principles. His last important work was his *Examples of Chinese Ornament* (1867). He died in 1874.

Jones, SIR WILLIAM, an English lawyer and oriental scholar, born in 1746. He was educated at Harrow and Oxford, and early acquired a reputation as a linguist, Hebrew, Persian, Arabic and even Chinese, besides German, Italian, French, Spanish and Portuguese, being among his acquisitions. In 1770 his translation (in French) of the life of Nadir Shah from the Persian appeared; in 1771 his grammar of the Persian language; in 1771 his *Poeseos Asiaticæ Commentariorum, Libri Sex;* and in 1781 his translation of the seven Arabic poems known as the *Moallâkat*. He had been called to the bar in 1774, and in 1783 was nominated judge in the supreme court of judicature, Bengal, and knighted. Here he did much for the furtherance of oriental studies, being one of the first Europeans to study Sanskrit, founding the Royal Asiatic Society, translating the *Sakuntala*, the *Ordinances of Manu*, besides tales, poems, extracts from the *Vedas*, etc. He also undertook a digest of the Hindu and Mohammedan laws, which he did not, however, live to complete. He died in Calcutta in 1794.

Jonesboro, a city, capital of Craighead county, Arkansas, 67 miles N. N. W. of Memphis, Tennessee. It is a lumber center and has large wood-working and other industries. Pop. 10,000.

Jongleurs (zhon-leur), a class of French minstrels in the middle ages who used to wander about entertaining people by song, music, story, etc., and sometimes by juggling feats, tumbling, etc.

Jönköping (yeun-cheup'ing), a town of Sweden, capital of the län of same name, at the southern extremity of Lake Wetter, 83 miles E. N. E. of Gothenburg. It is in general well built, and has manufactures of matches, leather, etc. Pop. (1911) 26,969.

Jonquil (jon'kwil), a bulbous plant of the genus *Narcissus* (*N. Jonquilla*), allied to the daffodil. It has long lily-like leaves, and spikes of yellow or white fragrant flowers. The sweet-scented jonquil (*N. odōrus*), a native of southern Europe, is also generally cultivated. Perfumed waters are obtained from jonquil flowers.

Jonson (jon'sun), BEN or BENJAMIN, a celebrated English poet, the contemporary and friend of Shakespere. He was the posthumous son of a clergyman, and was born in 1574, at Westminster. He was placed at the Westminster grammar school, under Camden, at an

Ben Jonson

early age, where he laid the foundation of his learning, but was ultimately withdrawn, it is said, by his stepfather, a master bricklayer, who wanted his assistance in the business. He soon tired of this occupation, entered the army as a private soldier, and showed much personal courage during a campaign in Holland. Returning to England he began his career as an actor, and in 1598 his drama *Every Man in His Humor* was printed. About this time Jonson was in some

danger of the gallows on account of having slain an actor in a duel, and was actually imprisoned for some time. In 1599 he brought out his comedy of *Every Man out of His Humor*, which was followed by *Cynthia's Revels* (1600); the *Poetaster* (1602); and *Sejanus*, a tragedy (1603). The festivities which welcomed the new king, James I, gave a new impulse to the representation of masques, in the composition of which the ready talent of Jonson was employed by the court itself, the celebrated Inigo Jones doing the decorations. In 1604 he had some share with Chapman and Marston in writing *Eastward Ho*, certain passages of which, reflecting satirically on the Scotch nation, drew down the anger of the king, and nearly cost the authors their nose and ears. In 1605 his comedy of *Volpone, or the Fox*, appeared; in 1609 *Epicœne, or The Silent Woman;* in 1610 the *Alchemist;* in 1611 *Catiline*, a tragedy; and in 1614 *Bartholomew Fair*, a complete picture of Elizabethan low life. In 1613 Jonson made a tour in France as governor of Sir Walter Raleigh's eldest son. In 1618 he visited Scotland, staying for some time with Drummond of Hawthornden, whose notes of his guest's conversation are among the best accounts we have of Jonson's personality. In 1619 he returned to England, received the honorary degree of A.M. from Oxford University, and on the death of the poet laureate was appointed his successor, and the salary raised to the sum of £100 by Charles I. Much of his time was spent at the Apollo, Mermaid, and other taverns, feasting, drinking and engaging in those brilliant contests of wit in which in earlier days Shakespere also took part. His later days were spent, not perhaps in much pecuniary prosperity, but certainly in fame and honor, as the acknowledged chief of English literature. He died in 1637, of an attack of palsy, leaving behind him an unfinished pastoral drama of great beauty, *The Sad Shepherd*. He was buried in Westminster Abbey, where a monument was erected to his memory with the inscription, 'O rare Ben Jonson.' Jonson's best dramas are excellent in plot and development, have strongly conceived characters and excellent traits of humor, but he is sometimes forced and unnatural, and deals perhaps too much with passing manners and eccentricities. He had a genuine lyrical power, seen in his short poems and the songs interspersed in his masques.

Joplin (jop'lin), a city of Jasper county, Missouri. It is the commercial center of the southwest Missouri lead and zinc region, the output of which is very large. It contains large smelting and white lead works. Pop. 32,848.

Joppa. See *Jaffa*.

Jordaens (yor'dāns), JAKOB, historical and portrait painter, born at Antwerp in 1594. He studied under his father-in-law, Van Oort, and then under Rubens, and has the reputation of being, after Rubens, Antwerp's greatest painter. His pictures, the subjects of which are mostly mythological scenes, and scenes from Flemish popular life, banquets, etc., are to be found in the chief European collections. His style is less elevated and powerful than that of Rubens, but preserves more of the national Flemish humor and realistic force. He died in 1678.

Jordan (jor-dan), the largest river in Palestine, and one of the most celebrated rivers in the world. It rises from several sources, uniting in Bahr el-Hûleh, or the Waters of Merom. From this point it flows with a rapid current in a narrow rocky bed, and falls after a southerly course of about 10 miles into Lake Tiberias. Shortly after leaving the south end of this lake it enters a broad valley or *ghor*, called in the Bible 'the plain'; and continuing a southerly but singularly crooked course of about 70 miles direct distance, or 200 including windings, falls into the north end of the Dead Sea, having received the Zerka or Jabbok, also on the left, and numerous smaller affluents. The upper part of the valley of the Jordan is hilly, arid, and barren, but it becomes more level and fertile as it approaches the Zerka. The river is muddy and full of small fish. In the dry season it is shallow, with an average width of from 30 to 50 yards. At its mouth it is about 180 yards broad and about 3 feet deep. It is subject to great inundations during the winter season. The valley of the Jordan forms one of the most remarkable depressions in the world, the Dead Sea being 1312 feet below sea-level, and the total fall of the river being about 2300 feet.

Jordan, DAVID STARR, naturalist, born at Gainesville, New York, in 1851. He became professor of biology at Butler University, Indianapolis, and subsequently in the University of Indiana. He investigated for the Census Bureau the marine industries of the Pacific coast, 1879-81. He has been president of Leland Stanford, Jr., University since 1891, and has written numerous works, including a *Manual of Vertebrates*, *Synopsis of the Fishes of North America*, and many other works and papers on scientific and general subjects.

Jordan, WILLIAM GEORGE, editor, born at New York in 1864; educated at the College of City, of New York; was successively editor of *Book Chat, Current Literature, Saturday Evening Post* and *Search Light*. In 1907, he proposed the organization of a House of Governors, to work for uniform legislation between the States. This led, in 1908, to the call by President Roosevelt, of a convention of governors at Washington, at which arrangements were made for annual meetings. An organization was formed of which Mr. Jordan was appointed secretary. He is the author of *Mental Training, The Power of Truth, The Crown of Individuality, The House of Governors*, etc.

Jornandes (jor-nan'dez; properly *Jordanes*), the historian of the Goths, and himself a Goth, was born about 500 A.D., was at first a vows, and is said to have been appointed bishop of some Italian city, probably Ravenna or Croton. Of his two works the chronicle *De Regnorum et Temporum Successione* is of value only when it approaches his own time. The other work, *De Rebus Geticis*, treating of the Goths, based on the lost history of Cassiodorus, is invaluable.

Jorullo, XORULLO (*hō-rụl'yō*), a volcano of Mexico, in the department of Michoacan, 160 miles southwest of Mexico, thrown up in 1759; height, about 4150 feet. There are at present scarcely any signs of activity about the mountain.

Joseph (jō'zef), one of the two sons of the patriarch Jacob by his favorite wife Rachel. His father's preference for him drew down the enmity of his elder brothers, who sold him to some Ishmaelitish slave-dealers, by whom he was sold to Potiphar, a distinguished officer in Egypt. The story of his elevation to the position of vice-regent of Egypt and the settlement of his father and brothers there is well known (Gen. xxxvii.—l). Authorities still differ as to the period in Egyptian history to which Joseph's life belongs, some placing it before, others under, and others after the time of the Hyksos or shepherd kings of Egypt.

Joseph, the husband of Mary the mother of Jesus, was a descendant of the house of David, though resident at Nazareth, where he followed the trade of a carpenter. Early tradition represents him as an old man at the time of his marriage, and he seems to have died before the commencement of the public ministry of Jesus. His day in the Roman Catholic calendar is March 19.

Joseph of Arimathæa, *i.e.*, of Ramathaim in Benjamin, a member of the Jewish Sanhedrim, who, though a believer in Jesus, had not the courage to make open profession of his faith. Nevertheless, after the crucifixion he went to Pilate, begged the body of Jesus, and along with Nicodemus buried it in his own garden. According to tradition he went as apostle to England. His day of celebration is March 17th.

Joseph I, Emperor of Germany, eldest son of Leopold I, born in 1678; became emperor in 1705. He was a zealous member of the alliance against France in the war of the Spanish succession, in which the victories of Marlborough and Eugene won glory for the imperial arms. He died in 1711.

Joseph II, Emperor of Germany, son of Francis I and Maria Theresa, was born in 1741. He was elected king of the Romans in 1764, and on the death of his father, 1765, German emperor, succeeding his mother, however, in the hereditary estates of the House of Austria only in 1780. He at once commenced an extensive scheme of reforms, but the country was not prepared for such sudden changes, and he was compelled to give up most of his plans. In 1788 he visited Catharine II at Cherson, and in league with her made war against Turkey. He died in 1790.

Joséphine (zhō-zā-fēn), Empress of the French, was born in Martinique, June 24, 1763, being the daughter of Lieutenant Tascher de la Pagerie. She married in 1779 Vicomte Alexandre Beauharnais, by whom she had two children, Eugène and Hortense. In 1794 her husband, who had been commander of the army of the Rhine, was executed by order of the Convention. She herself had a narrow escape, having been included in the list of proscription. After the fall of Robespierre she paid a visit to Napoleon to thank him for restoring the sword of her husband, and so pleased him that he soon after married her (1796). She became a beneficial element in his life, and her amiable manners won the hearts of everybody and helped to secure her husband's position. When Napoleon ascended the throne in 1804 she was crowned along with him. But the fact that the union was childless stood in the way of Napoleon's ambition to become the founder of a dynasty, and in 1809 Josephine was divorced, retiring to her beautiful seat of Malmaison, with the title of empress-queen-dowager and an annual grant of two million francs. She died in May, 1814.

Joseph's-coat, a popular American name for *Amaranthus tricolor.*

Joseph's-flower, the *Tragopogon pratensis* or yellow goat's-beard. See *Goat's-beard.*

Josephus (jō-sē'fus), FLAVIUS, the historian of the Jews, was born at Jerusalem in 37 A.D., and was carefully educated. In 64 A.D. he made a journey to Rome, and was introduced to Poppæa, the wife of Nero. On his return he found his countrymen preparing to throw off the Roman yoke, and having tried in vain to persuade them of the hopelessness of such a struggle, he accepted the post of defending the province of Galilee, and actually held the fortified town of Jotapata against the whole Roman army for forty-seven days. He was captured at the fall of the city, was afterwards present in the Roman army at the destruction of Jerusalem (A.D. 70), and went with Titus to Rome, where, assuming the family name of his patron, Flavius, he lived in learned leisure. Here he wrote (in Greek) *The History of the Jewish War; The Antiquities of the Jews,* giving a history of the Jews from the earliest times to the reign of Nero; an *Autobiography,* mostly relating, however, to the time of his military activity; and a work on the *Antiquity of the Jewish People,* directed against Apion, an Alexandrian grammarian. The date of his death is uncertain. He certainly saw the end of the century.

Joshua (josh'ū-a), the successor of Moses in the command of the Israelites, was the son of Nun, of the tribe of Ephraim. His name was at first *Hoshea* (help), but was changed by Moses into *Joshua* (Jehovah's help), of which *Jesus* is the Greek form. He was the only one, with the exception of Caleb, who brought back an encouraging report from the land of Canaan. He was nominated by Moses to succeed him in the command of the army of Israel, led the Israelites over the Jordan, and in the course of seven years conquered the greater part of Palestine, and divided the country among the tribes. He died at Timnath-Serah in Mount Ephraim at the age of 110. His history is contained in the canonical book which bears his name, and of which he has been usually regarded as the author; but modern critics have shown that it is a composite narrative, and contains references to many events which took place after Joshua's death.

Josiah (jō-sī'a), King of Judah, succeeded his father Amon at the age of eight years (639 B.C.). He is characterized in the Scriptures as doing 'that which was right in the sight of the Lord.' He took an active part in the reform of public worship, and commenced the restoration of the temple, during the progress of which the high priest Hilkiah discovered the book of the law, thought by some to be substantially the same as the book of Deuteronomy. The prescriptions it contained gave a decided direction to the reform movement which the king conducted with great vigor. In his thirty-first year, prompted probably by friendship to the King of Assyria, he marched out against Pharaoh Necho, who was on his way to attack that kingdom. The two armies met at Megiddo, where Josiah was slain.

Jósika (yō'shi ka), MIKLOS, BARON, a Hungarian novelist, born in 1796. He entered the army but resigned to write. Drawn into politics he became a supporter of Kossuth, and during the revolution of 1848 was a member of the committee of national defence. On the fall of the revolutionary government he escaped to Brussels. He died in 1865. His novels, of which *Abafi* is the most popular, are historical in character.

Josquin des Prez (zhos-kan dā prā), a musical composer, born between 1450 and 1455 in Northern France. He received an appointment in 1475 in the papal chapel at Rome, and latterly became chapelmaster to Louis XII. He died at Condé in 1521, where he held a canonry.

Jotuns (yō'tunz), in northern mythology, immense giants and magicians who had command over the powers of nature, and lived in dark caves in their kingdom of Jotunheim, from which they waged perpetual war against the Æsir, the bright gods of Valhalla. Originally they represented the destructive forces in nature. They were cunning, malignant, versed in witchcraft, but not highly intelligent.

Joubert (zhō-bär), JOSEPH, born at Montignac, Périgord, May 6, 1754; died at Paris, May 4, 1824. A French moralist and man of letters. Extracts from his manuscripts, under the title of *Pensées,* were edited by Chateaubriand, and later (1842), under the title *Pensées, Maximes, et Correspondence,* by Paul Raynal.

Joubert (jō'bert), PETRUS JACOBUS, Boer president, born at Congo, Cape Colony, in 1834. He migrated from Cape Colony with the Boers, settled in the Transvaal, was elected to the Volkaraad in 1863, and made president in 1874. War having begun against the

British in 1880, he won a decided victory against them in 1881, a treaty of peace following. He was elected vice-president in 1883, contested the Presidency in 1888, and in 1899 commanded the army in Natal, defeating the British in several engagements, and besieging Ladysmith for several months. He died in 1900.

Joudpore. See *Jodhpur.*

Jouffroy (zhö-frwä), THÉODORE SIMON, a French philosopher, born in 1796. He studied philosophy under Cousin, held the position of professor of philosophy in different colleges and normal schools; taught for some years in the College of France, and became a member of the Academy. He died at Paris in 1842. In philosophy he was mainly a follower of the Scottish school of Reid and Steward, some of whose works he translated into French. His own principal works are *Mélanges Philosophiques* and *Cours d'Esthétique.* As an original thinker Jouffroy has no claim either to profundity or intellectual brilliancy, but he had a talent for popular exposition, and followed prudent lines of speculation.

Jougs (jugz), an instrument of punishment formerly used in Scotland, consisting of an iron collar which surrounded the neck of the criminal, and was fastened to a wall or tree by an iron chain.

Jougs.

Joule (jöl), JAMES PRESCOTT, an English physicist, born in 1818. He studied under Dalton, the chemist, made researches in electro-magnetism, about 1840 turned his attention to the subject of heat, and ultimately established the theory of the mechanical equivalent of heat. His published work consists mainly of papers read before the Royal Society, of which he was made a fellow in 1850, receiving its medal in 1852 and the Copley medal in 1870. He received in 1878 a civil list pension of £200 in recognition of his services to science. His most important achievement was that of settling the mechanical equivalent of heat, which established that the quantity of heat capable of increasing the temperature of 1 lb. of water by one degree Fahrenheit requires for its evolution the expenditure of mechanical energy represented by the fall of 772 lbs. through the space of one foot. He died in 1889. See *Heat.*

Jourdan (zhör-dän), JEAN BAPTISTE, COUNT, marshal and peer of France, born in 1762; died in 1833. He distinguished himself under Dumouriez, was made a general of division in 1793, defeated the Austrians at Wattignies and at Fleurus, drove them beyond the Rhine, and took the fortress of Luxembourg, but was defeated at Höchst, and again at Würzburg (1796). In 1799, the Directory having given him the command of the army on the Danube, he crossed the Rhine at Basel, but was encountered by the Archduke Charles, who completely defeated him at Stockach. In 1803 he became a member of the senate, and in 1804, on the establishment of the empire, obtained the rank of marshal, the title of count, and a seat in the council of state. After the restoration he was raised to the peerage. He entered with spirit into the revolution of 1830. He wrote two works—*Mémoires pour servir à l'Histoire de la Campagne de 1796,* and *Opérations de l'Armée du Danube.*

Journalism (jur'nal-izm). See *Newspapers.*

Journey-weight, a term applied at the English mint to the weight of certain parcels of coin, which were probably considered formerly as a day's work. The journey-weight of gold is 15 troy lbs., which is coined into 701 sovereigns, or 1402 half-sovereigns. A journey-weight of silver weighs 60 lbs. troy, and is coined into 792 crowns, or 1584 half-crowns, or 3960 shillings, or 7920 sixpences.

Jovellanos (hö-vel-yä'nös), GASPAR MELCHIOR DE, a Spanish statesman and writer, born in 1744; died in 1811. It is mainly as a political economist and legist that he stands in the front rank as a Spanish writer; but he also wrote satires and miscellaneous pieces, a tragedy, *El Pelayo,* etc.

Jovianus (jö-vi-an'us), FLAVIUS CLAUDIUS, a Roman emperor, was originally captain of the household troops of the emperor Julian, whom he accompanied in the disastrous campaign against the Persians in which Julian lost his life (A.D. 363). After Julian's death he was proclaimed emperor by the troops, but could only extricate his army by ceding to the Persian monarch the five provinces beyond the Tigris. He was found dead in his bed when on his way to Constantinople, 364.

Jowett (jow'et), BENJAMIN, an English scholar, master of Balliol College, Oxford, was born in 1817; died in 1893. He studied at Oxford, was elected to a fellowship in 1838, and became regius professor of Greek in 1855.

In 1855 he published a commentary on the *Epistles of St. Paul.* He was one of the leaders of the Broad Church movement. In 1870 he became master of Balliol. He translated Plato.

Jowett, JOHN HENRY (1864-), a British clergyman, pastor of St. James' Congregational Church, Newcastle-on-Tyne, 1889-95; Carr's Lane, Birmingham, 1895-1911. In 1911 he became pastor of Fifth Avenue Presbyterian Church, New York, and retained the pastorate till 1919, when he returned to England.

Juan (hu-an'), the Spanish form of *John.* See *Don Juan.*

Juan de Fuca (jō'an), STRAIT OF, the strait between Vancouver Island and the State of Washington on the west coast of the United States.

Juan Fernandez, so called from the name of its discoverer, also sometimes Mas-a-Tierra, an island in the South Pacific Ocean, about 400 miles off the coast of Chile, to which it belongs. It is 18 miles long and 6 miles broad at the broadest part, mountainous, and of rugged aspect. Parts of it are fertile, producing various kinds of timber, peaches, figs, grapes, cherries, etc. There are excellent fish. The island is occupied by some hundreds of settlers, whose chief occupation is the furnishing of fresh vegetables, water, and wood to the whaling or other vessels that call here. De Foe is said to have founded his Robinson Crusoe on the history of the solitary residence here for over four years (1704-09) of a Scotch sailor, Alexander Selkirk, though his location of the island meant by De Foe is now denied.

Juarez (hu-à-reth'), BENITO PABLO, President of the Mexican Republic, was born of pure Indian parentage in 1806, and was elected president in 1861. He declared the suspension of public payments for two years to Europeans, a step which occasioned the interference of Britain, Spain and France. Troops were landed in Mexico in 1862, but Britain and Spain soon retired, leaving Napoleon III to carry out his views alone. Maximilian of Austria came on Napoleon's invitation to assume the throne, but Juarez, in spite of defeats and losses, continued to head a resistance, and when Napoleon under pressure from the American government withdrew his troops in 1866, the republicans carried all before them. Maximilian was captured and shot after a mock trial, and Juarez was reëlected to the presidency (1867), which position he held till he died (1872).

Juba I (jō'ba), king of Numidia, North Africa, in the first century B.C. On the breaking out of the civil war Juba fought against Cæsar; but being conquered in a battle at Thapsus, and abandoned by his subjects, he slew himself, in B.C. 46.—His son, JUBA II, was led in Cæsar's triumph at Rome, was carefully educated, and, having gained the favor of Augustus, received in marriage the daughter of Antony and Cleopatra, and was restored to the kingdom of his father, in B.C. 30, which some years after he exchanged for Mauritania. He wrote a history of Rome in Greek, a history of Arabia, treatises on the drama, painting, grammar, etc., of which only fragments are extant. He probably survived till 18 or 19 A.D.

Jubæa (jō-bē'a), a genus of palms. See *Coquito.*

Jubbulpore. See *Jabalpur.*

Jubilee (jō'bi-lē), a festival of the Jews, held every fiftieth year. During this year all slaves or captives were to be released; all estates which had been sold reverted to their original proprietors or their descendants; and the ground was to lie fallow. It has been doubted whether the law of jubilee was ever actually observed until after the return from the Babylonian exile, when, for a time at least, it came into operation. In 1300 a jubilee was instituted by Boniface VIII, who issued a bull granting plenary indulgence to all pilgrims who should visit Rome that year and perform certain ceremonies. The result was a vast concourse of pilgrims, from whom the church drew so much profit that in 1350 Clement VI declared a jubilee every fiftieth year, and in 1389 Urban VI every thirty-third year, and in 1470 Paul II every twenty-fifth year. The Reformation, which interfered with the sale of indulgences, sensibly diminished both the enthusiasm and the profits. The last jubilee, the twenty-third, was held in 1900.

Judæa (jō-dē'a), a term applied after the return of the Jews from exile to that part of Palestine bounded east by the Jordan and the Dead Sea, north by Samaria, west by the Mediterranean, and south by Arabia Petræa. See *Palestine.*

Judah (jō'da), the fourth son of the patriarch Jacob by his wife Leah, the progenitor of one of the twelve tribes. See *Jews.*

Judas (jō'das), surnamed *Iscariot,* meaning, perhaps, the man of Kerioth, a village of Judæa, was one of the twelve apostles of Jesus, and betrayed

his Master into the hands of the Jewish priests for thirty pieces of silver. Remorse for his crime led him to suicide. The Cainites, Cerinthians, and some other heretics held him in great veneration, believing that he alone saw the necessity for bringing about the fulfilment of prophecy and the atonement for humanity. Others have thought that his object was to oblige his Master to use his miraculous power to defeat his enemies and establish the new earthly kingdom of the Messiah, in which Judas expected to have a high place.

Judas, or JUDE, brother of James, one of the twelve apostles. Matthew and Mark call him *Theddæus surnamed Lebbæus.* Nothing is known of his life. By many he is considered the author of the epistle of Jude. See *Jude, Epistle of.*

Judas Maccabæus. See *Maccabees.*

Judas-tree (*Cercis Siliquastrum*), nat. order Leguminosæ, is a native of the Levant, Spain, south of France, Italy, etc. It grows to the height of about 20 feet, with pale green leaves and beautiful purple flowers, which are eaten mixed with salad or made into fritters. *C. canadensis,* or red-bud, another species, growing in Canada and the United States, is smaller.

Jude (jōd), EPISTLE OF, one of the books of the New Testament. Its canonicity was questioned by the primitive church, and often since. The Asiatic churches did not make use of it till the fourth century, nor was it known in the West till towards the close of the second. Its quotation from the apocryphal book of Enoch raised a prejudice against it, but it was eventually allowed to take its place as a portion of the sacred canon. It is a passionate denunciation of heretics and false teachers and has been supposed by some to be written by Judas, the brother of the Saviour, and not by Judas, the brother of James (see above).

Judge (juj), a person duly invested with authority to determine causes or questions between parties according to law. The term is quite a general one, being applicable to any one appointed to sit in a court of law and try causes. The title of *justice* is used for the judges of the Supreme Courts, etc. The judge at common law decides points of law, and enables the jury rightly to decide questions of fact, while in equity he decides both classes of questions. A judge cannot be prosecuted for the consequences of his decisions, except in the case where he may have acted without jurisdiction, nor can he officiate in a case where he has a personal interest, unless it be merely his common interest as a citizen, taxpayer, etc.

Judge Advocate, an officer appointed to preside at the proceedings of courts-martial, his duties being to summon witnesses, administer oaths, take a minute of the proceedings, advise the court on points of law, etc.

Judges, in Hebrew history. See *Jews.*

Judges, BOOK OF, a canonical book of the Old Testament, so called because the greater part of the narrative is occupied with the history of the judges who were raised up to deliver their countrymen from the oppressions of their neighbors. The first chapter, although formally connected with the book of Joshua by the opening sentence, evidently contains a separate portion of the history of the Israelitish invasion of Canaan, the first settlement, indeed, west of the Jordan, in which the tribes of Judah and Simeon play a distinct part in the conquest. The 6th verse of the 2d chapter again connects the work with the concluding part of the book of Joshua, and in the chapters which follow the history of the nation is written from an ideal and poetic point of view, which gives it unity, the judges being represented as successive rulers, although in most cases their history and influence were merely local. The third part of the book begins at chap. xvii, and has no formal or chronological connection with what has gone before, and has sometimes been called an appendix.

Judgment (juj'ment), in law, the judicial determination and decision of a court in an action. It is either interlocutory or final. In the former case it is given only on some particular point or proceeding, and does not complete the action in the same way as the final judgment, upon which, unless it be appealed against, suspended, or recalled, execution may follow.

Judgment-debt, in law, a debt secured to the creditor by a judge's order, and in respect of which he can at any time attach the debtor's goods and chattels. Such debts have the preference of being paid in full, as compared with simple contract debts.

Judith (jō'dith), widow of Manasses, a Jewish heroine, whose history is given in the apocryphal book which bears her name. Judith is represented as going out to the tent of Holo-

fernes, an Assyrian general who was besieging Bethulia, the city in which she lived, charming him with her beauty, and taking advantage of the admission to his tent, thus afforded to her, cut off his head with his own sword while he slept.

Judson, HARRY PRATT, American political scientist and educator, born in Jamestown, N. Y., in 1849, graduated from Williams College in 1870. From 1870 to 1885 he was teacher and principal in the high school, Troy, N. Y., and 1885-92, professor of history in the University of Minnesota. In 1892 he was appointed professor in the University of Chicago, and in 1907 was elected president. His works include *Europe in the Nineteenth Century*, *The Growth of the American Nation* and *The Essentials of a Written Constitution*.

Juggernaut. See *Jagannâtha*.

Juglandaceæ (jug-lan-dā'se-ē), the walnut tribe, a nat. order of exogenous plants, chiefly found in North America. They are trees with alternate pinnate stipulate leaves and unisexual flowers, the males, in catkins, the females in terminal clusters or loose racemes. Besides the walnut the order includes the butternut and hickory.

Jugo-Slavia (yö'gō-slāv'i-a), a kingdom in the northwest part of the Balkan peninsula, also known as the SERB-CROAT-SLOVENE STATE. It was formed in 1918 by the union of Servia, Croatia and Slavonia, following the defeat of Austria-Hungary in the European war (q. v.), and was one of the signatories of the treaties of 1919 (see *Treaty*). The former kingdom of Servia had an area of less than 34,000 square miles and a population of 3,000,000. The new state of Jugo-Slavia has an area of nearly 100,000 square miles and a population of 9,000,000. Roughly, Jugo-Slavia comprises the former Austro-Hungarian territories of Carniola, Croatia and Slavonia, Bosnia and Herzegovina, and part of Dalmatia, as well as the kingdom of Montenegro and the kingdom of Servia as it existed prior to 1918.

Jugular Vein (jug'ū-lâr), one of the large trunks by which the greater part of the blood that has circulated in the head, face and neck is returned to the heart. There are two on each side, an external or superficial, and an internal or deeper.

Jugurtha (ju-gur'tha), a king of Numidia, a natural son of Masinissa. Micipsa, his father's brother, and king of Numidia after Masinissa (B. C. 149), adopted him, and brought him up with his own sons, Adherbal and Hiempsal. Micipsa did his best to conciliate him, and declared him joint-heir to the crown with his two sons. But after the death of Micipsa Jugurtha had Hiempsal murdered and drove Adherbal from the country. Adherbal appealed to Rome, and after several Roman expeditions into Numidia, Jugurtha was captured (B. C. 106), led in the triumph of Marius at Rome, and finally thrown into a dungeon, where he was starved to death.

Juiz de Fora (shö-iz' dā fo'rà), or PARAHYBUNA, a town of Brazil, province of Minas Geraës, on the Parahybuna River. Pop. 8000.

Jujube (jö'jöb), the popular name of a genus of spiny and deciduous shrubs or small trees, genus *Zizyphus*, nat. order Rhamnaceæ. The species are numerous, and of several the fruit, which is blood-red or saffron-colored with a sweet granular pulp, is wholesome and pleasant to eat. The common jujube (*Z. vulgaris*) is a native of Syria, from which it was introduced into Europe. The fruit is dried and forms an article of commerce. *Z. Lotus*, which some believe to have given name to the ancient Lotophagi, a shrub 2 or 3 feet high, is a native of Persia and the north of Africa. *Z. spina Christi*, or Christ's thorn, is said to have furnished the branches of which our Saviour's crown of thorns was made.—The name jujube is also given to a confection made of gum-arabic or gelatine, sweetened and flavored so as to resemble the jujube fruit.

Jujuy (hū-hö'), a town of the Argentine Republic, capital of a province of same name, is situated on the Rio Grande, and carries on an active trade with Chile and Bolivia. Pop. 4159. —The province has an area of 19,000 sq. miles, and a pop. of 55,450.

Julep (jö'lep; from Persian, *gulâb*, rose-water), a sweet drink; specifically, in medicine, a solution of sugar in aromatic water, but not so concentrated as syrup. In the United States the name is given to a drink composed of spirituous liquor, as brandy or whiskey, sugar, pounded ice, and a seasoning of mint. It is also called mint-julep.

Julia (jö'li-a), the only child of the emperor Augustus, was his daughter by his second wife Scribonia, and was born B. C. 39. She was first married (B. C. 25) to her cousin, the young Marcellus, and afterwards to Marcus Vipsanius Agrippa, to whom she bore three sons and two daughters. On Agrippa's death, in B. C. 12, she was married to Tiberius, who left her on account of her licentiousness. Augustus banished her to Pandataria, a desolate

island on the coast of Campania, ultimately allowing her to live in Rhegium. After the death of the emperor, Tiberius treated her with great severity. She died in A.D. 14, in poverty and distress. Her son Agrippa had been put to death by Tiberius shortly before.

Julian (jōō'li-an), FLAVIUS CLAUDIUS JULIANUS, a Roman emperor, whom ecclesiastical writers have surnamed the *Apostate*, son of Julius Constantius (brother of Constantine the Great), was born at Constantinople in 331. When hardly six years old his father and several members of his family were murdered by the soldiers of his cousin, the emperor Constantius. He was brought up in the Christian religion, studied philosophy and letters, and resided in Athens, where he was induced to embrace paganism. Having received command of an army against the Germans, he defeated them at Strasburg, and drove them beyond the Rhine. He also displayed great talent as an administrator in Gaul. The emperor now became jealous of Julian, and recalled his best troops under pretense that he wanted to employ them against the Persians. This order caused rebellion among the soldiers, who proclaimed their leader Julian emperor in March, 360, in spite of his own resistance. Constantius prepared to proceed against him, but soon after died, and Julian was generally recognized as emperor. He began by putting a stop to many abuses, and limiting the splendor of his court, and was thus able to remit to the people the fifth part of all their taxes. He sought to restore the heathen worship in all its splendor, and on that account opposed Christianity as much as was in his power, without, however, persecuting the Christians themselves. He even sought to falsify the words of Christ by rebuilding the Jewish temple. In 363 he headed an expedition against the Persians, and took several cities, but was mortally wounded. He was an able ruler, and had also a reputation as an author. Some of his works have come down to us, including speeches, letters, and satirical pieces; the latter are distinguished for wit and humor. He wrote also a work against the Christian religion, of which we have yet some extracts.

Julian Calendar. See *Calendar* and *Epoch*.

Jülich (yü'lik), a town of Rhenish Prussia, 17 miles northeast of Aix-la-Chapelle. It was long the capital of an independent duchy. Pop. 5459.

Julien (zhü-lē-an), STANISLAS-AIGNAN, the leading Chinese scholar of his day, was born at Orleans, France, in 1799, and died in 1873. Possessed of an extraordinary linguistic faculty, he taught himself Greek, English, Italian, Spanish, Portuguese and German, and in 1823 commenced the study of Chinese under Abel Rémusat. At the end of twelve months he published a Latin translation of the philosopher Mencius. Thenceforth ancient and modern Chinese, Manchu, the Mongolian tongues, and later Sanskrit, were the subjects of exact and profound study. In 1832 he became professor of Chinese at the Collège de France; librarian at the Bibliothèque Nationale, 1839; president of the college, 1855; commander of the Legion of Honor, 1863. His most important work was entitled *Voyages des Pélerins Boudhistes* (Paris, 1853-58).

Juliers. See *Jülich*.

Julius (jōō'li-us), the name of three popes.—JULIUS I, born in Rome, chosen pope in 337; died in 352. He summoned a council which approved his conduct in sustaining Athanasius in his contest against the Arians in 342.—JULIUS II (Giuliano della Rovere), was elevated by his uncle Sixtus IV to the rank of a bishop and cardinal, was appointed papal legate to France, in 1503 was elected pope, and died 1513. Immediately on his elevation to the pontificate he planned the complete reëstablishment of the papal sovereignty in its ancient territory, and the extinction of foreign domination and influence in Italy. Refusing to attend the Council of Pisa convened by the King of France, he in 1511 formed the 'Holy League,' to which Spain, England and Switzerland were parties. In 1512 he made open war against Louis XII. The French defeated the papal army near Ravenna, but were soon after driven out of Italy. He is considered one of the most worldly of the popes, but was a far-sighted and patriotic sovereign, and a liberal and judicious patron of art and literature. To get means for building St. Peter's he ordered preaching of indulgences, which was one of the immediate causes of the Reformation.—JULIUS III (Giovanni Maria Giocchi), a Roman of low birth, was made cardinal by Paul III in 1536, took an active part in the Council of Trent as papal legate, was elected pope in 1550, and in the following year reopened the Council of Trent, which had been suspended for upwards of two years. He attempted a union with Nestorians. He died in 1555.

Julius Cæsar. See *Cæsar*.

Jullundur. See *Jalandhar.*

Julus. See *Iulus.*

July (jū-lī'), the seventh month in our calendar, having 31 days. In the Roman year it bore the name of *Quintilis*, as originally the fifth month. Its change of name to *Julius* was in honor of Julius Cæsar, who was born on the 12th of the month.

Jumilla (hū-mēl'yā), a town of Spain, in the province of and 75 miles N. N. W. of Murcia. Pop. 16,426.

Jummoo (jum-mō'), or JAMU, a portion of the state of Cashmere. See *Cashmere.*

Jumna (jum'nā), a river of Hindustan, which rises in the Himalayas, in the native state of Garhwal, near Jamnotri, at the height of 10,849 feet. It flows in its upper course in a generally S. W. direction, then bends to the southeastward, and passing the cities of Delhi and Agra falls into the Ganges at Allahabad, after a course of 860 miles. Some trade is carried on by means of clumsy barks. Two important irrigation works—the Jumna Eastern and the Jumna Western Canals, derive their supply of water from this river. The former is 160 miles long, and irrigates about 250,000 acres annually. The latter has a length of 433 miles, and irrigates on an average about 300,000 acres.

Jumnoutri. See *Jamnotri.*

Jumping-deer, the black-tailed deer (*Cervus Lewisii*), found in the United States to the west of the Mississippi.

Jumping-hare (*Pedetes capensis*), a species of jerboa found in Southern Africa, and so named from its general resemblance to a hare, while its jumping mode of progression, necessitated by the elongated nature of the hind legs, have procured for it its specific and popular distinction.

Jumping-mouse (*Meriones hudsonicus*), is found in Labrador and North America generally, but is especially an inhabitant of the fur territories. Like the jumping-hare, it is classified by some along with the jerboas, and is one of the smallest of these forms.

Jumping-rabbit, the alactaga (which see).

Junagarh (jū-nā-gur), a native State of India, in Gujarat, Bombay presidency; area 3283 sq. miles. The surface is generally level, but rises on the Girnar Hills to 3666 feet. The soil is generally good, but irrigation is extensively required. The nawab or ruler pays tribute both to the British government and to the Gaekwar of Baroda. Pop. 395,428. The capital, JUNAGARH, situated under the Girnar and Datar Hills, is one of the most picturesque cities in India, and has recently been greatly improved by the erection of a number of public and other buildings. Pop. 34,251.

Juncese (jun'se-ē), or JUNCA'CEÆ, the rush order, a small nat. order of endogenous plants, so named from the typical genus *Juncus*. It is principally composed of obscure herbaceous plants with brown or green glumaceous hexandrous flowers, the perianth being in two series, as in Liliaceæ, but calycine instead of petaloid. Some of them, as the common rush, are employed for making mats, chair-bottoms and brooms.

Junction City, a city, capital of Geary County, Kansas, 71 miles west of Topeka. It is an agricultural center, and has manufactories of military boots, tents, gloves, etc. Fort Riley, a large military post, is four miles away. Pop. 5598.

Juncus. See *Juncese* and *Rush.*

June (jōn; Lat. *Junius*), the sixth month in our calendar. It consisted originally of twenty-six days, to which it is said Romulus added four, and Numa took away one. Julius Cæsar again lengthened the month to thirty days, and it has ever since remained unaltered.

Juneau (jū'nō), a city, the capital of Alaska, situated on the coast 100 miles N. E. of Sitka. It is a wholesale supply point for Alaska, with mining and fishing interests. It succeeded Sitka as the seat of government in 1908. Pop. 1644.

June-berry, a North American wild tree (*Amelanchier canadensis*) common in Canada and the States, and allied to the medlar. The fruit is pear-shaped, about the size of a large pea, purplish in color, and a good article of food. *Service-berry* and *Shad-bush* are other names.

Jung (yung), JOHANN HEINRICH, commonly called *Jung Stilling*, a German writer, was born in 1740, and died in 1817. Poor in his youth, and apprenticed to a tailor, he at length succeeded in studying medicine at Strasburg, where he lived in intimacy with Goethe, and afterwards became a physician at Elberfeld. He was subsequently professor at Heidelberg, then for a number of years at Marburg, and later at Heidelberg

again. He has himself described the greater part of his life in *Heinrich Stilling's Leben* (1806), and *Heinrich Stilling's Alter* (1817). His works dealing with pietistic mysticism are numerous, including *Theobald oder die Schwärmer*, *Das Heimweh*, etc. Much opposition was excited by his strange works on spirits—*Theorie der Geisterkunde* ('Theory of Spirit-knowledge'), and the *Apology* for the same, which is connected with his *Scenen aus dem Geisterreiche* ('Scenes from the Spirit-world').

Jung, Sir Salar, Dewan or Prime Minister of Hyderabad, was born in 1829, and died in 1883. He is chiefly remembered for the energy with which he held in check his native state during the mutiny in 1857-58. When he visited England in 1876 he was knighted in recognition of his valuable services to British rule in India.

Jung-Bahadur, Sir, Prime Minister of Nepal, was born in 1816; died in 1877. His uncle held a high position under the queen, who appointed the nephew commander-in-chief of the army. When the premier was assassinated in 1846 Jung-Bahadur revenged him on his murderers and succeeded as premier. A conspiracy against him was quenched in blood, the king and queen were banished and the heir-apparent was raised to the throne. He aided the British in the mutiny of 1857, and in reward was knighted and given the Grand Cross of the Star of India.

Jung-Breslau. See *Inowraclaw*.

Jungermanniaceæ (ē'se-ē), a group (jun-ger-man-i-) of cryptogams closely resembling mosses, usually regarded as a suborder of Hepaticæ, but sometimes classed as a separate natural order. Most of them have distinct leaves. They inhabit the trunks of trees or damp earth, in cool moist climates.

Jungfrau (yuns'frou; 'Maiden'), a mountain of Switzerland, in the Bernese or Helvetic Alps, on the frontiers between the cantons of Bern and Valais, 12 miles S. S. E. Interlaken. It is one of the most magnificent mountains in Switzerland and the loftiest calcareous mountain in Europe: height 13,670 feet. It was first ascended in 1804.

Jungle (jung'gl), properly an Indian term applied to a desert and uncultivated region whether covered with wood and dense vegetation or not, but in English it is applied to land covered with forest trees, thick impenetrable brushwood, or any coarse, rank vegetation.

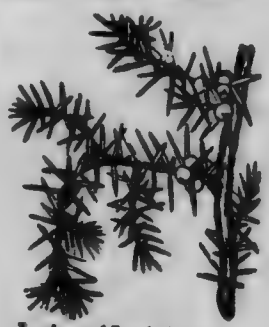
Jungle-fever, a species of disease prevalent in the East Indies and other tropical regions, a severe variety of remittent fever. It is characterized by the recurrence of paroxysms and of cold and hot stages. The remissions occur usually in the morning and last from eight to twelve hours, the fever being mostly typically developed at night.

Jungle-fowl, a name given to two groups of birds, the one a native of Australia, the other of India, Java, etc. The jungle-fowl of Australia is *Megapodius tumulus*. See *Megapodius*. The other birds called jungle-fowl are of the same genus as the domestic fowl, which is believed to be derived from one or other of them. The Indian jungle fowl *Gallus Sonneratti* is abundant in the higher wooded districts of India. It is about equal in size to an ordinary domestic fowl, but more slender and graceful in its form; the colors are rich and beautiful.

Juniata, a borough of Blair County, Pennsylvania, on the main line of the Pennsylvania R. R. Pop. 6000.

Juniata River, a stream in Pennsylvania, formed near the center of the State by the junction of the Little Juniata and Frankstown branch, flowing in a generally E. course and emptying into the Susquehanna 14 miles above Harrisburg. It is about 150 miles long, and though not navigable is noted for its picturesque scenery. Beside it are the Pennsylvania canal and railroad, the latter frequently crossing the stream.

Junin (hō-nēn'), a department of Peru, embracing the wildest parts of the Cordilleras; area about 28,000 sq. miles; pop. 394,393.



Juniper (*Juniperus communis*).

Juniper (jō'ni-pèr), the name of hardy exogenous evergreen trees and shrubs of the genus *Juniperus*, chiefly natives of the northern parts of the world. They belong to the nat. order Coniferæ, group Gymnospermeæ. About twenty species are known, the most important of which are the *J. communis*, *J. sabina*, or *savin*, *J. Virginiana*, and *J. Bermudiana*. *J. communis*, or common juniper,

is a common bush growing wild in all the northern parts of Europe. The berries require two years to come to maturity, when they assume a bluish-black color. They are used extensively in Holland in the preparation of gin, which owes its characteristic flavor to them. They yield an essential oil, which is a powerful diuretic. *J. sabina* or *savin* also yields a powerful diuretic, and an oil which is a local irritant. *J. Virginiana* and *J. Bermudiana* are trees. The former is the common red cedar of North America; the latter is known as Bermudas cedar. Both yield a wood used by cabinet-makers, etc., and in the manufacture of pencils.

Junius (jō'ni-us), a signature attached to certain letters on public affairs which first appeared in *The Public Advertiser*, a London paper published by Woodfall, from which they are copied into most of the other journals of the time. The earliest bears date January 21, 1769; the last, January 21, 1772. After they were completed they were collected and published by Woodfall, with a dedication to the English nation and a preface by the author. Other letters bearing the same characteristics, but having different signatures, appeared between April 28, 1767 and May 12, 1772, and are given in the younger Woodfall's edition as the *Miscellaneous Letters*. This edition was published in 1812 in three vols., and included Junius' private letters to Mr. H. S. Woodfall, and a preliminary essay by Dr. J. Mason Good. An enlargement and improved edition was published in Bohn's Standard Library, edited by John Wade, with an essay by the editor in favor of the claims of Sir Philip Francis to the authorship. Although fully a century has elapsed since the publication of these papers, their authorship seems as far from being settled as ever. In seeking for a probable author of these letters the chief difficulty has been to find any one who combined the knowledge, circumstances, distinctive opinions, and literary skill displayed by Junius. He supported the court party against America, favored triennial parliaments, and opposed the abolition of rotten boroughs. He was evidently well acquainted with court and city politics, the management of public offices, the private intrigues of the time, and if not a lawyer he had considerable knowledge of law. Besides this he seems to have been a man of rank and fortune, for we find him writing to Woodfall; 'I am far above all pecuniary views'; and he expressly asserted that, 'My rank and fortune place me above a common bribe.' With these characteristics and this wide information he united a boldness, vehemence, and rancor which, combined with his epigrammatic and unsparing invective, rendered him an object of terror to those whom he attacked. Public suspicion at the time was fixed most strongly on Burke and Viscount Sackville. But Burke denied the authorship spontaneously to Dr. Johnson, and apart from considerations drawn from his temper, style, and turn of thinking, on several points Burke and Junius were in direct opposition to each other. That Viscount Sackville was the author received considerable belief at the time. His rank, fortune, temper, and talents concur to make it probable, while the friends and enemies of Sackville and Junius coincide. Yet the proof is far from complete in favor of this hypothesis. An attempt was also made to show that Lord Temple was the author, on the ground that the political and personal connections of Junius and Lord Temple were the same, and that his talents, age, circumstances, style of writing and thinking, rendered the hypothesis probable. The opinion that Sir Philip Francis (died 1818) was Junius has been probably the most common. But the internal argument is against the supposition: Francis was but twenty-seven when the first letters were written, and he never displayed before or after any proofs of a capacity or knowledge equal to the compositions of Junius. This opinion was supported by Macaulay; but of his five grounds for ascribing the authorship to Sir Philip Francis, two of them are known to be erroneous suppositions.

Junius, Franciscus, a Dutch scholar, born in 1589, lived for about thirty years in England, then in Holland, and died at Windsor in 1677. Of Anglo-Saxon and the ancient Germanic literatures he had an extensive knowledge; he published a glossary of Gothic, and a work on English etymology (*Etymologicum Anglicanum*), and left a valuable collection of MSS.

Junk, a flat-bottomed ship used in the waters of China and Japan, sometimes reaching 1000 tons. It has a high forecastle and poop, and ordinarily three masts of considerable height, each mast being in one piece, with a lug-sail, generally of bamboo splits. The bow is bluff, the stern full, and there is a very large rudder.

Juno (jō'nō), the most exalted divinity of the Latin races in Italy next to Jupiter, of whom she was the sister and wife; the equivalent of the Greek Hera. She was the queen of heaven, and under the name of Regina (queen) was wor-

shipped in Italy at an early period. She bore the same relation to women that Jupiter did to men. She was regarded as the special protectress of whatever was connected with marriage, and females

Chinese Junks.

from birth to death had her as a tutelary genius. She was also the guardian of the national finances, and a temple, which contained the mint, was erected to her under the name of Juno Monēta on the Capitoline. See also *Hera*.

Junot (zhū-nō), ANDOCHE, Duke of Abrantes, a French marshal, was born in 1771, and died in 1813. He was intended for the bar, but on the outbreak of the revolution joined a volunteer battalion, and soon attracted notice. At the siege of Toulon, in 1793, he became secretary to Napoleon, who afterwards took him with him into Italy and Egypt in the capacity of aide-de-camp. In Egypt he was advanced to the rank of general of brigade. In 1800 he was made commandant of Paris, and he particularly distinguished himself at the battle of Austerlitz in 1805. In 1807 he was sent with an army into Portugal, and made his entry without opposition into Lisbon, his success being rewarded with the title of Duke of Abrantes. On the arrival of the British he first allowed himself to be defeated at Vimeira, and was then obliged to submit to the humiliating convention of Cintra. Although he subsequently took part in the campaigns (1809) against Austria, (1810) against Spain, and (1812) against Russia, he failed to retrieve his reputation. In 1813 he became insane, and lost his life by leaping from a window.

Junta (jun'tä; Spanish, an assembly), in Spain, a high council of state. It was originally applied to an irregularly summoned assembly of the states, as distinguished from the Cortes or Parliament regularly called together by the authority of the king.

Jupati Palm (jū-pä-tē'; *Raphia tædigera*), a palm which grows on the rich alluvial tide-washed soil on the banks of the Lower Amazon and Pará rivers in Brazil. The trunk is only 6 or 8 feet high and 1 foot in diameter. The leaves rise nearly vertically from the trunk, bending out on every side in graceful curves, forming a magnificent plume 70 feet in height and 40 in diameter. Leaves have been measured 48 and 50 feet long, and even these are not the largest. The leaf-stalks, which measure from 12 to 15 feet in length, are used by the natives for a variety of purposes, as for the walls of houses, baskets, boxes, etc. Their rind yields fibrous filaments (*raphi* fiber), which are imported into Europe for agricultural tie-bands, etc.

Jupiter (jū'pi-tẽr), or JUPPITER, the supreme deity of the Latin races in ancient Italy, the same as the Greek *Zeus*, and the Sanskrit *dyaus*

Jupiter.

(which means the sky); the second part being the same as the Latin *pater*, father. As the supreme deity Jupiter received from the Romans the title of *optimus*

maximus (best greatest), and as the deity presiding over the sky he was considered as the originator of all the changes that took place in the sky. From him accordingly proceeded rain, hail, and the thunderbolt, and he it was that restored serenity to the sky after it had been obscured by clouds. Hence the epithets of Pluvius (rainy), Tonans (thundering), etc., were applied to him. The most celebrated of his temples was that on the Capitoline Hill dedicated to him as Jupiter Optimus Maximus, jointly with Juno and Minerva. He was represented with a scepter as symbolical of his supreme authority. He maintained the sanctity of oaths; he was the guardian of all property; and every Roman was believed to be under his protection, and that of his consort Juno, the queen of heaven. White animals were offered up to him in sacrifice, his priests wore white caps, and his chariot was represented as drawn by four white horses.

Jupiter, is the largest planet of the solar system, and the fifth (excluding the asteroids) in order of distance from the sun. Its mean diameter is about 85,000 miles; its polar diameter about 84,570; its mean distance from the sun 483,000,000 miles; its period of revolution round the sun 11 years 10 1/3 months; its orbit is inclined to the ecliptic at the angle 1° 18′ 40.3″. The inclination of its axis is very small (3° 5′), so that changes in the seasons must be almost unknown; its volume is over 1390 times that of the earth, but its mass is only 300.857 times. Its surface shows belts of dark and light shade, which are usually but not always parallel to each other, undergo quick changes, and seem as though they merged into one another. To account for these rapid changes in its atmosphere it seems reasonable to believe that its interior mass is intensely heated similarly to that of the sun, hence the intense light proceeding from this planet. Jupiter has eight moons, four of large size discovered by Galileo in 1610, and four small ones recently discovered by aid of photography. They appear, like our moon, to make one revolution on their axis while passing once round the planet, the time of one revolution of the 4 large ones being from 1 day 18 hours 27 minutes to 16 days 16 hours 32 minutes. Europa, the smallest of these, has a diameter of 2045 miles; Ganymede, the largest, has a diameter of 3558 miles. Those recently discovered are very much smaller. The moons appear from the earth to move in nearly straight lines from one side of the planet to the other, so that the planes of their orbits are nearly the same as the ecliptic and the orbit of Jupiter; they are eclipsed in the shadow of the planet, and their own shadows may be seen passing over the planet's surface. From observation of the eclipses of Jupiter's satellites Römer discovered that the propagation of light is not instantaneous, and thus calculated its velocity.

Jupiter Ammon. See *Ammon.*

Jupon (jö-pon′), JUPPON, a tight-fitting military garment without sleeves, formerly worn over the armor, and descending just below the hips. It was frequently richly emblazoned and highly ornamented.

Jura (jö′ra), an island of Scotland, one of the inner Hebrides, in the county of Argyle; length 36 miles, mean breadth 7. Its general aspect is exceedingly wild and rugged, and it is chiefly devoted to the rearing of cattle.

Jura (zhü-râ), a department in the east of France, bordering on Switzerland; area, 1938 sq. miles. A large part is covered by the Jura mountains (see next article), and it is drained by the Ain and the Oignon. The pastures are both extensive and rich, and the cattle reared on them, together with their dairy produce (including Gruyère cheese), form the chief source of wealth. Iron is worked, marble and alabaster abound, and there are salt springs in different quarters, from which salt is made. Lons-le-Saulnier is the capital. Pop. 261,288.

Jura a chain of mountains in Central Europe, partly belonging to France, partly to Switzerland, between which they form a sort of natural barrier, extending from southwest to northeast, and exhibiting a number of parallel ridges. The greatest length is some 200 miles, from Belley in France, department of Ain, to the banks of the Rhine; and the greatest breadth about 63 miles, between the Lake of Geneva and the banks of the Doubs. The principal geological formation is the Jura limestone, with greensand, belonging to the lower cretaceous series. Stalactite caves are numerous. The two chief rivers which have their source in the chain are both French—the Ain and the Doubs—and descending from its western slopes, belong to the basin of the Rhone. Its highest points are Crêt de la Neige, Reculet, Mont Tendre and Dôle, the heights of which are respectively 5651, 5645, 5517 and 5514 feet.

Jurassic System (jö-ras′ik), the name given by geologists to what is termed in England the *Oölitic system* of strata, it being very characteristic of the Jura Mountains

The name is used in a wider sense to include both the Oölite and Lias.

Jurassic Sea-lizard (*Ichthyosaurus communis*).

Jurisprudence (jö-ris-prö'dens), the science of law.—MEDICAL JURISPRUDENCE, another name for forensic medicine (which see).

Jurua (zhö-rö-ä'), a little-known river of Northwestern Brazil, which rises on the borders of Peru and enters the Amazon on the right. Length 700 or 800 miles.

Jury (jö'ri). The origin of trial by jury is not traceable to any single legislator or any particular period. It seems to have had its beginning in certain primitive customs of the northern European races, and received special developments from different nations. By the Anglo-Saxons a person who was accused of crime was permitted to summon twelve of his neighbors, called compurgators, who swore to his innocence. This was the origin of an institution which took settled and vigorous form after the Norman Conquest, gradually developing into its present form.

In criminal trials two juries act, the *grand jury* and the *petit jury*. The *grand jury* may consist of any number more than eleven and less than twenty-four men, who have been summoned by a mandate from the sheriff of the county. Their names are returned on a piece of parchment which is called a *panel*. The oath having been administered, they are usually instructed by the presiding judge in the nature and number of the offenses about to be brought before them. They then proceed to consider in private the statement or *indictment* which is brought against the accused by the prosecution. Should they agree, to the number of twelve, that the accusation has a basis of truth, they bring into court what is called 'a true bill.' If, on the contrary, they find that there is no sufficient foundation for the accusation, they *ignore* the bill, and require the dismissal of the accused. When a true bill is found by the grand jury it usually forms the basis of the subsequent prosecution. The grand juryman is qualified by being a freeholder of his county, to what amount is not clearly defined.

Petty or *petit juries* consist of twelve persons, and no more, for the trial of all criminal offenses, and of all issues of fact in civil cases at the common law. The jury is selected by ballot from those summoned. If all the jurists do not appear, or any of them are justly objected to and set aside, in virtue of the right of challenge exercised by the parties to a suit (see *Challenge*), the deficiency is usually supplied by making a new panel. The jury being then sworn is placed in the jury-box, and the evidence given. No juror is at liberty to leave the box without permission of the Court. Unless the case be a criminal one, in which the prisoner is charged with a misdemeanor, the jury are allowed to go home on engaging not to allow themselves to be spoken to on any subject connected with the trial. When the prisoner is charged with treason or felony the jury are usually allowed to retire only in custody of the sheriff and his officers, who are sworn to keep them together, and not to speak to them with reference to the trial. When the evidence has been led it is usual for the presiding judge to instruct the jury in the points of law which apply to it. It is thus that their duties are divided—the jury dealing with the facts, and the judge with the law of the case. The jury usually form an independent judgment upon the facts, and their finding is considered final. To consider their verdict they usually withdraw to a private room, where no intercourse with other persons is permitted, and where, when the session is protracted, food and other necessaries are supplied. Upon returning into court they publicly assent to such verdict as they have agreed upon. In the United States if they fail to agree among themselves the jurymen are discharged by the judge, and the cause whether civil or criminal can be tried anew, at the pleasure of the court. The jury is an Anglo-Saxon institution and has only recently been adopted by any of the continental nations of Europe. In France the verdict of a majority of the jury is sufficient.

Another kind of jury is the *coroner's jury*, summoned to inquire into cases of sudden or violent death. The inquiry is made in presence of the body, and at the place where the death happened. The jury may consist of any number above eleven, and usually numbers twenty-three; twelve must concur in the finding. Persons found guilty of causing the death are reserved for trial by a petty jury.

Jury-mast, a temporary mast erected in a new ship, or in place of one that has been carried away by tempest, battle, etc.

Jussieu (zhüs-yeu), a French family belonging to Lyons, which has

produced a number of distinguished botanists, of whom the following are the principal:—ANTOINE DE, born in 1686; died in 1758.—BERNARD DE, brother of the above, born in 1699; died in 1877.—ANTOINE LAURENT DE, nephew of the above, born in 1748; died in 1836. His work entitled *Genera Plantarum* formed the first complete exposition of the natural system of classifying plants, which has now taken the place of the artificial Linnæan system. His other chief work was *Principes de la Méthode Naturelle des Végétaux.*—ADRIEN DE, son of the preceding, born in 1797; died in 1853. By his researches and publications he placed himself in the front rank of botanists. His best-known work was *Traité Elémenteire de Botanique,* for use in higher-class schools, which far excelled all previous works of the kind.

Juste-milieu (zhûst-mē-lyeu), a French expression signifying 'the true mean'; specifically applied to that method of administering government which consists in maintaining itself by moderation and conciliation between the extreme parties on either side.

Justice (jus'tis), a common term for a judge or legal official appointed to hold courts and administer justice, especially given to judges of superior courts. Thus in England the judges in the common law and chancery divisions of the High Court of Justice are so called, the head of the common law division being the lord chief justice of England. The term is similarly used in the Supreme Courts of the United States and the several States. See also *Chief Justice,* and articles below.

Justice, HIGH COURT OF. See *Supreme Court.*

Justice, LORD CHIEF. See *Chief Justice.*

Justice of the Peace, a judicial magistrate entrusted with the conservation of the peace. In Britain the first judicial proceedings are held before him in regard to arresting persons accused of grave offenses; and his jurisdiction extends to trial and adjudication for small offenses. In case of the commission of a crime or a breach of the peace a complaint is made to one of these magistrates. If he is satisfied with the evidence of a commission of some offense, he issues a warrant directed to a constable, tries the party if the offense be within his jurisdiction, and acquits him or awards punishment. The justices meet in petty or quarter session, where offenses of a trivial sort are tried by them, and the statute business of the county is administered. These duties are all performed gratuitously, and not always efficiently, and in recent years there has been an occasional outcry against 'the great unpaid.' Besides qualifications of rank, any person having an estate of £100 per annum free of charge is eligible for the office. In Scotland the duties of a justice of the peace are more limited than in England, at least in practice. A rank or property qualification is not necessary. In Canada there are everywhere justices of the peace, holding their commissions from the crown, as in Britain, and having similar duties within their respective jurisdiction. The same is the case in other British colonies. In the United States the office is held only by special appointment, and the tenure is different in different states; but the commission is usually for three or four years, or some other specific limited period. Their position is similar to that of the justices in Britain. In some of the states they have a right to celebrate marriages.

Justices, LORDS, in Great Britain, persons formerly appointed by the sovereign to act for a time as his substitute in the supreme government, either of the whole kingdom or of a part of it. Thus when George I went abroad in May, 1719, he entrusted the government during his absence to thirteen lords-justices; and nineteen lords-justices and guardians were also appointed when George IV went to Hanover in 1821. The lord-lieutenant of Ireland is a familiar example of a lord-justice.—The title *Lords-justices of Appeal* is in England given to a certain number of judges belonging to the appeal division of the Supreme Court of Judicature.

Justices in Eyre, OR ITINERANT JUSTICES, in England, justices who travel about over fixed circuits dispensing justice, the judges of assize in fact. Such itinerant judges were first appointed in 1176; in Magna Charta they were required to visit each county annually.

Justiciary Court (jus-tish'i-a-ri), the supreme criminal court in Scotland, consisting of the lord justice-general (who is the president), the lord justice-clerk, and five commissioners of justiciary, who are also lords of session. The judges go on circuit to three districts, viz.: Jedburgh, Dumfries and Ayr; Glasgow, Inverary and Stirling; and Dundee, Perth, Aberdeen and Inverness. One lord can hold a circuit court, and there is no appeal from his judgment.

Justifiable Homicide. See *Homicide.*

Justification (jus-ti-fi-kā'shun), a theological term employed to designate the act by which a person is accounted just or righteous in the sight of God, or placed in a state of salvation. This conception of God as a judge who absolves the sinner on account of Christ's merit and imputed righteousness is based upon the Pauline writings, and which received its most pronounced expression during the time of the Reformation.

Justin (jus'tin), JUSTI'NUS, the name of two emperors of the East.—JUSTIN I, born in 450; died in 523 A.D., a peasant of Dacia, rose from a common soldier to be commander of the imperial guard, and on the death of Anastasius in 518 became emperor. He relegated the civil administration to the quæstor Proclus, and between them the empire was governed with a fair amount of success.—JUSTIN II ascended the throne on the death of his uncle, Justinian I, in 565. Beset with enemies outside the empire and harassed with internal discord, he in 574 solved his difficulties by abdicating in favor of Tiberius, captain of the guard. He died in 578.

Justin, MARCUS JUSTINIANUS JUSTINUS, a Latin historian, who probably lived at Rome in the second or third century after Christ, although some assign him a later date. He made an epitome of the general history of antiquity by Trogus Pompeius, a native of Gaul, who lived in the time of Augustus, and whose work is no longer extant. This epitome, although incorrect in detail, is valuable for its compressed reproduction of the old histories.

Justinian I, FLAVIUS ANICIUS JUSTINIANUS, surnamed the *Great*, nephew of Justin I, Emperor of the East, celebrated as a lawgiver, was born of an obscure family in 483 A.D., and died in 565. Patronized by his uncle, who, from a Thracian peasant, had become emperor, he so flattered the senate and dazzled the people that he was made consul, and took the title of *nobilissimus*. On the death of his uncle, with whom he had latterly shared the imperial power, he was proclaimed emperor, and married an actress named Theodora. During his reign the party disputes of the *Greens* and the *Blues* became so violent that in his attempt to quell the tumults the emperor's own life was in jeopardy, and a great part of Constantinople was destroyed by fire. Aided by his generals, he was able subsequently to restore to the Roman empire a part of its former possessions, as when Belisarius in 523 and 529 defeated the Persians, and achieved victories in Africa, and when Narses, another of his generals, put an end to the Ostrogoth rule in Italy. Turning his attention to the laws, Justinian commissioned ten learned civilians to draw up a new code, and the result was the *Corpus Juris Civilis*, or *body of civil law*. This was a work which still remains of great value to the legal world. He took great interest in building cities, fortifications, and churches; among the latter he rebuilt the church of St. Sophia at Constantinople. To maintain his public munificence he oppressed the people with taxes, and suffered his servants to commit the most flagrant crimes. His reign of thirty-eight years was a great period in the empire's history, but the emperor himself was by no means great.

Justin Martyr, an early Christian writer, born in Palestine about 100 A.D., suffered for his faith about 165. Born a heathen but converted to Christianity, he went to Rome, where he wrote an *Apology for Christianity*, with a supplementary or second *Apology*, a *Dialogue with Tryphe the Jew*, all still extant, besides other works. He is of importance in the history of Christian dogma.

Jute (jōt), a textile fabric obtained from *Corchŏrus capsulāris*, a plant belonging to the nat. order Tiliaceæ (lime or linden). The jute plant is a native of the warmer parts of India, where its cultivation is carried on, especially in Bengal, on an extensive scale. It is an annual plant, growing to a height of 12 or 14 feet. The fiber forms the inner bark of the plant, and possesses in an eminent degree the tenacity common to the bark of the plants of this order. The fiber is fine, and has a shining surface; it is injured by exposure to water, and hence is not well adapted for cordage and canvas, but is in extensive use for making bags, and in the United States and Great Britain serves many useful purposes, being mixed with hemp for cordage, and with silk in the manufacture of cheap satins; its principal use is in the manufacture of coarse cloth for bagging, and in making the foundation of inferior carpets, mats, etc. In Bengal, jute has been cultivated and its fibers woven into various fabrics from a remote period, but it is only since about 1830 that its manufacture has risen to importance in Europe. The headquarters of this branch of industry are at Dundee, Scotland. The rice, cotton, sugar, coffee, pepper, and other articles of East Indian commerce are almost wholly carried in gunny bags (as the jute bags are called), made and exported from Bengal.

Jüterbogk (yü'ter-bok), a town of Prussia, province of Brandenburg, 30 miles S. S. W. of Berlin, with manufactures of woolens, and a church in which is preserved Tetzel's indulgence-box. Pop. 7407.

Jutland (jut'land; Danish, *Jylland*), the peninsular and most important portion of Denmark, surrounded on three sides by the sea—the Skager Rack, the Kattegat, and the North Sea, on the south by Schleswig; area, 9755 sq. miles. A remarkable feature is the series of inland water-basins known as the Liimfiord, extending from the North Sea to the Kattegat, and finding their chief outlet near Aalborg. The outlet towards the North Sea is sometimes sanded up altogether. The highest point of Jutland is the Himmeljberg, 550 feet above sea-level. There are many lakes and small rivers. The climate on the whole is temperate, but variable. Pop. 1,061,904.

Jutland, Battle of, One of the greatest naval battles of the world was fought on May 31, 1916, off the Jutland coast. For nearly two years the British Grand Fleet had been watching for a chance to engage the German High Seas Fleet, which had lain secure in the Baltic behind the mine fields and coast defenses of Helgoland and the Kiel Canal. On the afternoon of Wednesday, May 31, a British battle cruiser squadron scouting about 75 miles off the Danish coast and the entrance to the Skager Rack, sighted a part of the German High Seas Fleet. Soon the whole German fleet appeared and the British Grand Fleet was summoned by wireless. In the battle that ensued the Germans admitted losing a battle cruiser, a battleship, four cruisers and five destroyers, with a loss in total tonnage of 63,015, an estimated money loss of $63,000,000. The British admitted losing three battle cruisers, three armored cruisers, and eight destroyers; total tonnage lost, 114,100; estimated money loss, $115,000,000. There were between 4000 and 5000 men lost on each side. The battle was indecisive; and after the great conflict, the fleets returned to their bases. A British squadron of older battleships hurried up from the south, but did not arrive till after the conclusion of the battle and returned without taking any part in the fighting.

Juvenal (jö've-nal)—DECIMUS JUNIUS JUVENALIS—a Latin satirical poet, was born probably about the year 42 A. D. at Aquinum, a Volscian town. He is said to have been the adopted child of a wealthy freedman; to have been by profession a pleader; to have died in Egypt as an exile in charge of a cohort of infantry. Nothing of this is authentic; we only know certainly that he resided in Aquinum and flourished about the end of the first century after Christ. His extant works are sixteen satires, composed in hexameters, and giving in powerful language, inspired by a bitter and heartfelt indignation, a somber picture of the corrupt Roman society of that era. His satires have also been translated by Gifford, and some of them by Dryden, while Johnson's imitations of the third and tenth (under the titles *London*, and the *Vanity of Human Wishes*) are well known.

Juvenile Courts (jö've-nil), tribunals for the trial of youthful offenders, who are usually sent to industrial schools or houses of detention, where they receive moral and industrial training. Courts for this purpose began their existence in Chicago in 1899, and have since been established in some form in many cities of the United States and elsewhere. They owe their origin to the growing conception that the methods formerly used of sending youthful delinquents to jail had the tendency to convert them into a class of criminals, while they might be made useful citizens by more judicious and humanitarian treatment. As yet this movement has been most successful in the States of the Mississippi Valley, though the cities of Denver and Boston have been conspicuous examples of success. Judge Lindsey, of the former city, did much to develop the new system of treatment, adopting in 1901 the plan of sending such delinquents to the Industrial School at Golden, Colorado, instead of to the city prison as heretofore. He trusted the young offenders so far as to send them to the school without escort, putting them upon their honor to go there. The result was that out of several hundred sent only five broke their word. A number of the States have adopted this method and New York and others have recently legislated on the subject. Chicago has a magnificent Juvenile Court building, Philadelphia opened a model House of Detention in 1909, and Milwaukee and St. Louis have similar institutions. Buffalo was the first city in the State of New York to open a Children's Court. As an example of results the work at Chicago may be alluded to. In that city, in ten years, 31,257 children passed through the court, charged with truancy or delinquency of various kinds. The great majority of them were put on probation, and the records show that over 80 per cent. of the boys thus trusted were not brought into

court again. The same can be said for only 55 per cent. of the girls, showing that the treatment of the latter is the more serious problem of the two. The purpose of the houses of detention is the separation of youthful from adult criminals, but only a few cities have so far adopted them. Juvenile Courts have been opened in Canada and Australia and in several English cities, while the subject is under earnest consideration in a number of European countries. Houses of Detention differ from Houses of Refuge, long in existence in certain communities, in being temporary in their purpose, while in the latter unruly and vicious children are brought up under supervision and taught some useful trade.

Juvenile Offenders, is a term legally applied in Britain to young prisoners, as distinct from adult offenders. When the crime is theft, the criminal, if under 16, can be sent to a house of correction for three months or fined in a sum not over £3. Also the law permits a boy under 14 to be whipped with a birch rod to the number of 12 strokes. The magistrate has the power to send the offender, at the end of his imprisonment, to a reformatory for a term of from two to five years. If able, the parents or guardians of such children are often obliged to bear the expense.

Juxon (juks'on), William, an English prelate, born in 1582; died in 1663. After studying at St. John's College, Oxford, he became a student of Gray's Inn, with the view of qualifying for the bar, but took orders and obtained livings, first in 1600 at Oxford, and then in 1614 at Somerton. In 1621 he succeeded Laud as president of St. John's College; in 1627 was appointed vice-chancellor of the university, and about the same time chaplain in ordinary to Charles I, who gave him the deanery of Worcester and then the bishopric of London (1633). He had the melancholy privilege of soothing the king's last moments, and ministering to him on the scaffold. His fidelity cost him his bishopric, but at the Restoration he was made Archbishop of Canterbury.

K

K,* the eleventh letter of the English alphabet, representing a guttural articulation, the surd consonant corresponding to the sonant *g*. In Anglo-Saxon this letter was used only occasionally, *c* being regularly used instead. So also in Latin, *k*, borrowed from the Greeks, was little used, its place being supplied by *c*. The Italians, Spaniards and Portuguese have banished the letter entirely from their alphabet. The French use it only in a few words derived from the Greek, foreign proper names, etc. At the beginning of a word or syllable *k* is not pronounced when followed by *n*, as *knife*, *knee*, *know*.

Kaaba (kä'ä-bä), or CAABA, the sacred shrine at Mecca to which Moslems make their pilgrimages. It is a flat-roofed, quadrangular structure about 40 feet high, 55 feet long and 45 broad, and stands in the center of the mosque or sacred area, which is enclosed by walls and colonnades. At the southeast corner of the Kaaba, built into the wall, is the famous 'black-stone' or *Keblah*, the point to which every pious Moslem directs his face in prayer, and which is devoutly kissed by the pilgrim. According to Mussulman tradition, this was originally of a dazzling white, and was brought from heaven by Gabriel to Abraham when he was erecting the Kaaba. Round the Kaaba are various sacred buildings, and near it the Zem-Zem or holy well.

Kaaden (kä'den), a town in Bohemia, on the Eger. Pop. 7459.

Kaalund (kä'lun), HANS WILHELM, a Danish poet, born at Copenhagen, 1818, died, 1885.

Kaap Gold-fields, a district in the Transvaal, intersected by the Kaap River, a tributary of the Crocodile, containing the mining town of Barberton and other settlements.

Kabbala. See *Cabala*.

Kabinda. See *Cabinda*.

Kabul. See *Cabul*.

Kabyles. See *Berbers*.

Kadapa. Same as *Cuddapah*.

Kadi. See *Cadi*.

Kadiak (käd'yak), KODIAK, an island south of Alaska, and like it belonging to the United States. The inhabitants, less than 3000 in number, resemble the Eskimos, and live by hunting and fishing, a considerable fur trade being done.

Kadom (kä-dom'), an ancient town of Russia, government of Tamboff, on the river Moksha. Pop. 6361.

Kaempfer (kämp'fer), ENGELBRECHT, a German traveler and physician, born in 1651; died in 1716. As secretary to a Swedish embassy, and afterwards as surgeon in the service of the Dutch East India Company, he traveled extensively in the East. His comprehensive work on Japan, translated from his manuscripts into English in 1727, was, for a very long period, the only reliable source of information about that country.

Kaf. See *Caf*.

Kaffa (käf'fa), a mountainous territory to the south of Abyssinia, inhabited by one of the Galla tribes. It is supposed to be the home of the coffee-plant, which grows wild on the slopes of the Kaffa hills. The chief town is Bonga.

Kaffa. See *Feodosia*.

Kaffir-bread, a kind of sago obtained from the stems of one or two plants of the Cycas family, natives of S. Africa.

Kaffir Corn (*Sorghum vulgare*), a variety of millet cultivated in some parts of Africa.

Kaffir Ox, The Cape buffalo. See *Buffalo*.

Kaffirs (käf'fers), KAFFERS, or CAFFERS (from Arabic *Kafir*, infidel or unbeliever), the principal race inhabiting Southeastern Africa, a branch of the great Bantu family. The name

*Where the reader may fail to find articles under K, he is referred to C.

is now chiefly restricted to the tribes occupying the coast districts between Cape Colony and Delagoa Bay. They differ from the negroes in the shape of the head, it being more like that of Europeans; in the high nose, frizzled hair and brown complexion, which becomes lighter in shade in the tribes of the more southern districts. They are a tall, muscular race, the average height being from 5 ft. 9 in. to 5 ft. 11 in., and frugal and simple in their habits. Their chief occupation is raising and tending cattle and hunting; garden and field work is mainly performed by women. They are of a peaceful disposition, but in times of war they display considerable bravery, tactical skill and dexterity in the handling of their assegais

Kaffir Chief of the Zulu Tribe.

or spears, shields and clubs, as has been shown in their engagements with the British forces. There are several distinct branches or families of Kaffirs; but the tribes which recent events have specially brought to the front are the Pondos, the Fingoes, the Zulus and the Swazi. Kaffirs, especially of the Zulu tribe, are distributed in large numbers over Natal and Cape Colony, and have become to some extent civilized. Frequent hostilities have taken place between the British and one or other of the Kaffir tribes, beginning almost with the first acquisition by Britain of the Cape Colony. The first Kaffir war was in 1811-12, the next in 1818-19. In 1834-35 a serious Kaffir war was carried on, resulting in the expulsion of the Kaffirs beyond the Great Kei, but they were soon allowed to return. Another war (the fourth) broke out in 1846, and lasted nearly two years, with much suffering to both colonists and Kaffirs. Its result was an extension of British territory in the north and east, a portion between the Cape Colony and the Kei being reserved for the natives, and called British Kaffraria. In 1850 a Kaffir outbreak took place, and a bloody war followed, ending in 1853, soon after which British Kaffraria was made a crown colony. A sixth war occurred in 1877-78, owing its origin to disputes between the two tribes of the Fingoes and Gcalekas. For a subsequent war see *Zululand*.

Kaffraria (kăf-frā'ri-a), literally the country of the Kaffirs, a name once applied to a large part of Southeastern Africa, but now limited to the coast district stretching from the Cape Colony to Natal, recently brought under British control. A tract of land southwest of the Kei used to be known as British Kaffraria, but since 1865 it has formed two districts of Cape Colony, namely, King William's Town and East London. See *Kaffirs*.

Kafiristan (kä-fi-ris-tän'), or the country of Kafirs (infidels), a tract northeast of Afghanistan, between India and the Hindu-Kush. It is very mountainous, especially the interior, and inhabited by a nation (the Siaposh) formed of different tribes, varying considerably in complexion. They live chiefly by cattle-raising and agriculture. Although hemmed in by Moslems, they have, excepting a few border tribes, resisted the spread of Islamism. Polygamy is practised, and they dress themselves in goatskins, or fabrics woven from goats' hair, black being the almost universal color.

Kaftan (kaf'tan), or CAFTAN, a long vest or gown worn under a long cloth coat in Turkey, Egypt, Persia and other Eastern countries, tied round the waist with a girdle, and having long sleeves.

Kagoshima (kä-gō-shō'mä), a town in Japan, at the southern end of the island of Kiushiu, on the Kagoshima Gulf. It was bombarded by a British squadron in 1863, and set on fire. In January, 1914, it was laid waste by the eruption of the volcano of Sakura-Jima. The population at that time was 60,000.

Kahau. See *Proboscis Monkey*.

Kaieteur (kī-e-tōr), a waterfall in British Guiana, on the Potaro River, 822 feet high.

Kail. See *Cabbage.*

Kailas (kī-lās'), a sacred mountain of the Hindus in the Himalayas, near the sources of the Indus and Sutlej; height, 20,226 ft.

Kaimacam (kī-mä-käm'), a Turkish title derived from the Arabic, signifying 'substitute,' and given to the officials who are at the head of the districts called livas, being subdivisions of the vilayets. The lieutenants of the grand-vizier are also thus called.

Kainite (kān'it), a hydrous sulphate of potash and magnesia, found along with beds of rock salt, especially in Germany and Austria. It is valuable for the production of double sulphate of potash and magnesia, and is used as a manure.

Kainozoic. See *Cainozoic.*

Kaira (kī'ra), a town and district of India, Bombay Presidency. The town is an ancient place with a handsome courthouse, government schools, etc. Pop. 10,392. The district has an area of 1561 sq. miles and a pop. of 716,332.

Kairwan (kīr-wän'), a town of Tunis, 80 miles S. S. E. of the capital, in a barren sandy plain, and surrounded by a wall. It ranks second only to Tunis in trade and population, and is one of the holy Mohammedan towns, being formerly almost inaccessible to Christians. Under French rule it has been connected with Tunis by a good road and partly by tramway, and a new water-supply has been introduced. Kairwan was the first seat of Saracenic empire in Barbary, and relics of its ancient grandeur still abound. Pop. about 26,000.

Kaisariah (kī'sär-ē'yä), or KAISARIYEH, a town in the interior of Asia Minor, vilayet of Angora, south of the Kizil-Irmak, anciently called *Cæsarea.* Pop. est. at 70,000. See also *Cæsarea.*

Kaisar-i-Hind, Hindustani for Empress of India, the title conferred on Queen Victoria in 1876 by an act of Parliament and proclamation at Delhi.

Kaiser (kī'zer), the German word for emperor, from L. *Cæsar.* This title was revived in 1871, when William III of Prussia became Emperor of Germany.

Kaiak (kī'yak), or KAJAK, an Eskimo boat, used in fishing. It is about 18 feet long and 18 inches wide in center, tapering to the ends, is covered with skins and closed at the top except a hole in the center in which the boatman sits, propelling the boat with a paddle.

Kaiserslautern (kī'zers-lou-tern), a town in the Bavarian Palatinate, on the Lauter. It has manufactures of woolens, cottons, hosiery, stoneware and leather; breweries, glassworks, paper and other mills, and important iron works. Pop. (1911) 54,659.

Kaiser Wilhelm Canal, commonly known as the KIEL CANAL, is 61 miles long, and extends from Brunsbüttel on the Elbe to Holtenau on Kiel Bay. The passage occupies from eight to ten hours, and the saving is 200 miles. It was begun in June, 1887, and opened in June, 1895. Reconstructed at a cost of $55,000,000 to facilitate the passage of the largest war ship, it was reopened in 1914. By the peace of 1919 (see *Treaty*) it was opened to free passage of all ships.

Kaiser Wilhelm Land. See *New Guinea.*

Kaithal (kīt-hal'), an ancient town of India, Punjab, Karnal district, with manufactures of lac ornaments and toys and saltpeter refineries. Pop. 14,408.

Kakapo. See *Owl Parrot.*

Kakodyle (kak'o-dīl), or CACODYLE, a compound of hydrocarbon and arsenic, a clear liquid heavier than water, with an insupportably offensive smell and poisonous vapor. Its vapor when mixed with air explodes if heated above 50° C. The oxide of kakodyle is *alkarsin,* which see.

Kalabagh (kä-la-bäg'), a town of India, in the Punjab, on the Indus, close to hills and cliffs of solid rock salt, which is extensively quarried. Pop. 5428.

Kaladgi (ka-läd'gi), a town of India in the south of Bombay Presidency. Pop. 7024.

Kalafat (kal-a-fat'), a town in Roumania, on the left bank of the Danube, about 1 mile east of Widdin, on the opposite bank. Since Roumania has become an independent kingdom it has made rapid progress. Pop. 7113.

Kalahari (kä-la-hä'rē), or KALIHARI, a desert region in Central South Africa, north of the Orange River, a large tract of which is included in the British protectorate of Bechuanaland. It is very flat, subject to long-continued droughts, and has only dried-up river beds; nevertheless, it is not devoid of vegetation, patches of grass and shrubs occurring here and there. An abundant supply of watermelons and some remark-

able varieties of tubers, together with large herds of antelopes and other game, provide ample subsistence to the bushmen and Bakalahari inhabiting this barren region.

Kalahasti (kä-lä-häs'tĭ), a town of India, Madras Presidency, North Arcot district, with a temple of Siva, which is a place of pilgrimage. Pop. 9985.

Kalakaua I, DAVID, King of Hawaii, born in 1836; died in 1891. He became king in 1874, and in 1887 was compelled to grant a new constitution which much restricted his authority.

Kalamata (kä-la-ma'ta), a seaport of Greece, in the Morea, capital of the government of Messenia, at the head of the Gulf of Koron. It is the seat of an archbishop, and has an export trade in wool, oil, silk and figs. Pop. (1907) 13,123.

Kalamazoo (kal-a-ma-zō'), a city of Michigan, capital of a county of the same name. It is 144 miles E. N. E. of Chicago, situated in a fertile agricultural district, with an extensive celery industry, on a river of the same name, which supplies some of its numerous factories with water power. Paper, harrows, springs and corsets are largely produced, and there are numerous other manufactures. Here is Kalamazoo College (Baptist) and the Michigan Asylum for the Insane. Pop. 39,437.

Kalb, JOHANN, BARON DE, born in Bavaria in 1721; entered the French army as lieutenant in 1743; became captain 1747, and brigadier-general 1761. He was sent on a secret mission to America in 1768, and came again with Lafayette in 1777. He was appointed major-general, and served in New Jersey and Maryland. In April, 1780, he was sent to join the Southern army as second in command to Gates, and on August 16 was mortally wounded at Camden, S. Carolina, dying three days later.

Kale. See *Cabbage.*

Kaleidoscope (ka-lī'dō-skōp), a well-known optical toy invented by Sir David Brewster, by which an infinite variety of symmetrical, and often beautiful, colored designs is obtained. The ordinary kaleidoscope consists of a tube containing two glass plates acting as mirrors, which extend along its whole length and make an angle of 60° with one another. One end of the tube is closed by a metal plate with a small hole at its center, to which the eye is applied; at the other end there are two plates, one of ground the other of clear glass (the latter being next the eye), with a number of pieces of colored glass or beads lying loosely between them. When the eye is applied to the aperture the mirrors produce a beautiful symmetrical figure, and when the tube is turned about or shaken new images, always symmetrical, are formed. This arrangement may be modified in various ways. The instrument has been used by designers of patterns for printed calicoes, etc.

Kalendar. See *Calendar.*

Kali (ka'lē), a Hindu goddess, one of the forms of the consort of Siva, and therefore in some respects corresponding to Durga and other deities. She is represented as black, with four arms, wearing a necklace of skulls, and the hands of slaughtered giants round her waist as a girdle. Her eyebrows and breast appear streaming with the blood of monsters she has slain and devoured. One hand holds a sword, another a human head. She is the goddess of death and destruction, and goats and other animals are sacrificed on her altars. Ancient Hindu books even enjoined human sacrifices to this bloodthirsty goddess. Her worship is said to be characterized by vile secret rites.

Kali (kä'lĭ), a plant, a species of *Salsola*, or glasswort, the ashes of which may be used in making glass.

Kâlidâsa (kä-li-dä'sa), one of the greatest Indian poets and dramatic writers, who lived, according to tradition, in the first century B.C., but some authorities assert that he flourished several centuries after the Christian era. His best production is the drama *Sâkuntala*, which was first translated into English by Sir W. Jones (Calcutta, 1789), and at once aroused in Europe attention to Sanskrit literature. He was also the author of two other plays—*Vikramorvaçî* ('The Hero and the Nymph'), and *Mâlavikâ and Agnimitrâ*, while two epics and other works are ascribed to him, some of which have also been made accessible to the general public by translations.

Kalif. See *Caliph.*

Kalihari. See *Kalahari.*

Kalinjar (kä'lin-jär), a village and hill fort of India, N. W. Provinces, Banda district, a place of great antiquity and sanctity, with tanks, caves, temples, tombs, statues, etc.

Kalisch (kä'lish), or KALISZ, a town and province in Russian Poland, near the Prussian frontier. Area of province 4392 square miles, pop. 983,200. The town is of great antiquity, being founded in 655, and was for a long

period the residence of the grand dukes of Poland, whose palace still exists. It is an important trade center, and the capital of the province. Pop. 52,565.

Kalispel, a city in Flathead County, Montana, 98 miles N. by W. of Missoula. Pop. 5549.

Kalium (kal'i-um), another name for potassium, whence its symbol K is derived.

Kalm (kälm), Peter (1716-79), a Swedish botanist, born at Ostro Bothnia, Sweden, educated at Upsala and Abo universities. He traveled extensively in Russia, and at the suggestion of Linnæus (See *Linné*), whose friend he was, the Swedish government sent him across the Atlantic to study the botany and natural history of North America. He arrived in Philadelphia in 1748 and after spending three years in Pennsylvania, New York and Canada he returned to Abo, becoming a professor at the university. The evergreen plant *kalmia* was named in his honor. In addition to a number of scientific works he wrote 'A Voyage to North America,' which was translated into English by J. R. Foster and first appeared in 1770.

Kalmar. See *Calmar.*

Kalmia (kal'mi-a), a beautiful North American genus of shrubs, with cup-shaped rose or purple flowers disposed in corymbs, and belonging to the natural order Ericaceæ, or heaths. The *K. latifolia*, commonly called *mountain laurel* or *calico bush*, much valued in European gardens for its flowers and foliage, has its home in the Alleghany Mountains. Its trunk sometimes attains a diameter of 3 inches; the wood is very hard, closely resembling that of the boxtree.

Kalmucks (kal'muks), a nomadic and warlike Mongol race, originally natives of the territory of Central Asia between the Koko-Nor and Tibet, but now inhabiting not only parts of the Chinese empire, but also occupying districts of Siberia and European Russia, where they settled under Russian dominion on the Ural, Don and Volga, and in the government of Simbirsk. They have fought many bloody battles with the Tartars, with the Chinese, and among themselves, and made predatory expeditions as far west as Asia Minor, and as early as the eleventh century. Many of the Russian Kalmucks have been converted to Christianity. They are intrepid soldiers, splendid horsemen, and troops of them are attached to almost every Cossack regiment. Physically the Kalmucks are small of stature, broad-shouldered, with small round heads, and the narrow oblique eyes characteristic of the Mongolian race. They number altogether perhaps 700,000, of whom more than half are under Chinese rule.

Kalocza (kä-lot'shä), a town of Hungary, 67 miles south of Budapest, near the Danube; a Roman Catholic archbishopric with fine cathedral and episcopal palace. Pop. 11,380.

Kalong. See *Fox-bat.*

Kalpi. See *Calpee.*

Kaluga (ka-lö'ga), a town and government of European Russia. The government is bounded by those of Moscow, Smolensk, Tula and Orel, has an area, mostly flat and sandy, of 11,942 square miles and a pop. of 1,287,300. The central parts are covered with immense pine and fir forests, the rest is poorly cultivated, producing chiefly grain, hemp and flax. Iron ore and a poor kind of coal are also raised. The town stands on an elevation on the right bank of the Oka, a navigable river, 114 miles s. w. of Moscow, has rope and canvas factories, and trades largely with Germany in leather and candles. Pop. (1911) 49,728.

Kalusz (kä'lus[illegible]), a town of Austria, in Galicia, 60 miles southeast of Lemberg, with natural deposits of potassium salts. Pop. 7821.

Kama (kä'ma), the Hindu god of love, corresponding, generally speaking, to the Greek Eros and Roman Cupid.

Kama or Kamadeva.

He appears as a beautiful youth riding on a parrot, generally carrying a bow with a string formed of bees, and having five arrows, each tipped with a flower that is supposed to have some amorous

influence. Dancing girls or nymphs bear him company, and one carries his banner, the emblem on which is a fish or marine monster on a red ground.

Kama (kä'ma), the largest tributary of the Volga, rises in the Russian government Viatka, and after a course of 1150 miles flows into the Volga, 40 miles south of Kasan. Part of it is navigable for steamers, and ordinary barges can proceed as far as Perm.

Kamaha'meha I, King of the Hawaiian Islands, born about 1758; died in 1819. Chief of one of the islands, he conquered the whole group and became the first king of Hawaii in 1781. Four others of the same title succeeded, Kamehameha III introducing a constitutional form of government in 1840, and Kamehameha V proclaiming a new constitution in 1864. These governmental changes were made under missionary influences.

Kamala (kăm'a-la), a drug long known, under various names, to Indian and Arab physicians, as a specific against the tapeworm, introduced in the British Pharmacopœia in 1864 as a vermifuge, in doses of 30 grains to a quarter of an ounce in syrup or gruel. It occurs as a brick-red powder, adherent to the fruit of the *Rottlera tinctoria*, formed by minute, roundish, semitransparent granules, mixed with stellate hairs, and is largely collected in the forests of Madras, where it forms an important source of revenue. The active principle of the powder lies in the 80 per cent. of resin it contains, which also supplies the coloring matter, called *rottlerin*, used as a silk dye. Another variety, exclusively employed as a dye, comes from the east coast of Africa, but differs from the Indian product in the deep purple color, the coarseness of its particles, and the large simple hairs which are found mixed with it.

Kamaon. See *Kumaon.*

Kambaluc. See *Cambaluc.*

Kamenetz (kä'me-nyets), a fortified town of Russia, capital of the government of Podolia, on the Smotritz. Pop. 39,113.

Kames, Lord. See *Home, Henry.*

Kampen (kăm'pen), a town of Holland, on the Yssel, near where it enters the Zuider Zee. It has two interesting churches and a town hall. It was one of the towns belonging to the Hanseatic League, and still has some commercial importance, trading in dairy produce, etc. Pop. 19,664.

Kämpfer See *Kaempfer.*

Kamptee (kăm'tē), or Kamthi, a town of India, Central Provinces, Nagpur district, with an extensive military cantonment, a fine bridge over the Kanhân river, a Protestant and a Roman Catholic church, and a large trade. Pop. 38,886.

Kamptulicon (kamp-tē'li-kon), a floor covering first introduced to the general public in 1862. The best is made of India rubber, gutta-percha and powdered cork.

Kamimura (kăm-i-mûr'ä), Vice-Admiral Hikonojo, a Japanese naval officer, died August 8, 1916, aged 67. As commander-in-chief of the Second Squadron he took an important part in the Russo-Japanese war, for which he was awarded the title of baron and invested with the grand cordon of the Rising Sun and the first class order of the Golden Kite. He is believed to have led in the naval assault with the British Squadron against the German base at Tsing-Tao, China, in 1914.

Kamrup (kăm-röp'), a district of Assam, in the Brahmaputra Valley; area, 3857 sq. miles. Pop. 589,187.

Kamsin (kam'sin), a name in Egypt for the simoom.

Kamchatka (kam-chat'ka), a large peninsula in the northeast of Asia. On the east it has the North Pacific Ocean, and on the west the Sea of Okhotsk; it is upwards of 800 miles in length and 190 in average breadth; square miles, 85,000. It is a Russian possession since 1706. A lofty mountain range extends the whole length of the peninsula. Some of the mountains are active volcanoes, and eruptions are of frequent occurrence. A number of hot springs also exist. The climate is very severe. Excepting in the valley of the Kamchatka River, the most fertile and populous settlement, the soil is but ill adapted for cultivation. The chief wealth of the country lies in its fur-producing animals, including the sable, the Arctic fox, the beaver and the bear. Game and fish of all kinds abound, and form the staple food of the inhabitants. The Kamchadales, once the predominant race of the peninsula, are a branch of the Mongol family, a low type physically and morally; but they are rapidly vanishing before the Russian settlers. In 1886 they were stated to be less than 2000. Their food consists mainly of fish seasoned with whale and seal fat. They believe in a creator and the immortality of the soul (including animals). They use dogs for draught purposes, and not the reindeer,

like their neighbors. The Koryaks are a wandering tribe, living in the northern districts, and subsisting almost exclusively on the produce of the reindeer. The entire pop. is about 7500. The capital, Petropaulovsk, has a pop. of about 1000.

Kamyshin (ka-mi'shin), a town of European Russia, at the juncture of the Kamyshinka and the Volga, in the government and 106 miles s. s. w. of Saratov. It was founded by Peter the Great in the year 1710. Pop. 15,934.

Kanagawa (kä-na-gä'wa), a seaport of Japan, in the island of Hondo, or Niphon, on an inlet of the Bay of Yedo, forming one place of trade with the adjacent Yokohama, open to British trade since 1859. Pop. 12,000. See *Yokohama*.

Kanakas (ka-na'kas), the native inhabitants of the Sandwich Islands; in New Caledonia and the New Hebrides the name is applied to all the native laborers, without distinction of origin.

Kanara. See *Canara*.

Kanari-oil (ka-na'ri), an oil yielded by the fruits of *Canarium commune*, a tree of the Indian Archipelago and Southeastern Asia, often called Java almond. The oil is used for culinary purposes and for burning, and is deemed superior to cocoanut oil. See *Canarium*.

Kanaris (kä'nä-ris), CONSTANTINE, a Greek sailor, born in the island of Ipsara about 1790, and who became famous in Europe in 1822 for his daring exploits in firing the Turkish fleets in the Chios and Tenedos Straits. In 1825 he unsuccessfully attempted the destruction of the Turkish fleet in the port of Alexandria, ready to carry Arab troops to Morea. On his return to Greece in 1828, the President, Capodistrias, gave him the command of a fortress and later on that of a squadron; a trust which he amply justified by loyal service at a most critical period. King Otho raised him successively to the rank of captain of the first class, admiral and senator. He was minister of marine in 1846, 1848-49 and 1854-55. In 1862 he took an active part in the overthrow of the government of Otho.

Kanas'ter. See *Canaster*.

Kanauj (ka-nouj'), ancient city of India, 49 miles from Cawnpore.

Kanazawa (kä-na-zä'wa), a town of Japan, near the northwest coast of the island of Hondo (Niphon), with manufactures of silks, porcelain, etc. Pop. (1903) 110,994.

Kanchil, the chevrotain (which see).

Kandahar, or CANDAHAR (kan-da-har'), a town of considerable commercial and strategical importance in the south of Afghanistan, on the direct route to India. It was held by British forces in 1839-42 and 1879-81, and the fortifications have recently been much strengthened. The town lies 3484 feet above the sea, has a large transit trade, and a pop. estimated at from 25,000 to 50,000.

Kandavu (kän-dä-vö'), the southernmost island of the Fiji group. It has a fine natural harbor, with a port of call for steamers, and is surrounded by a number of small islands, called the Kandavu group.

Kandesh. See *Khandesh*.

Kandy. See *Candy*.

Kane (kän), ELISHA KENT, a surgeon, traveler and Arctic explorer, born at Philadelphia in 1820; died at Havana in 1857. He was graduated as M.D. at the University of Pennsylvania in 1842, was attached as surgeon to the American mission to China, and afterwards visited India, Egypt and Greece. In 1846 he rendered important service as a volunteer in the United States army in Mexico, in 1850 by his survey of the Gulf of Mexico, and in the same year joined the Grinnell Expedition, as medical and scientific member, in the unsuccessful search for Sir John Franklin. His observations led him to the belief that there was a large open sea near the pole, and with a view to penetrate it he organized and commanded a second expedition, which left New York in the *Advance* in May, 1853. He succeeded in getting as far as 78° 43′ N. lat., where he was frozen up for twenty-one months, and being harassed by scurvy and want of provisions was obliged to abandon the vessel. A perilous journey of 1300 miles in boats and sledges brought him back to Greenland, and he again reached New York in November, 1855. Much broken in health, he sailed for Cuba to recruit but died there. The accounts of his two expeditions added much to our knowledge of the Arctic regions.

Kane, a borough and summer resort of McKean County, Pennsylvania, 195 miles E. S. E. of Erie. It is in an oil and gas district and has large glass works, wood-working industries, etc. Mushroom growing is a leading industry. Pop. 6626.

Kanem (kä'nem), a district of Central Africa, north and northeast of Lake Tchad, now belonging to Bornu, but formerly an independent state.

Kangaroo (kang-ga-rö'), the common name of a number of animals belonging to the marsupial order of mammals, indigenous to Australia, and first made known to Europe by Captain Cook. The most noticeable feature about the kangaroo is the disproportion between the upper and lower parts of the body. The head is small, deer-like in shape, with large ears; the forelegs small and five-toed; the hindlegs very large and powerful, with four toes only on the feet. The tail is long, thick at the base, and helps to support the animal when sitting erect, the usual posture when not feeding; it

Kangaroo

also assists the hindlegs in their long leaps (from 10 to 15 feet). The young are born very immature, and protected and nourished for about eight months in the *marsupium*, or pouch, into which the nipples of the mammary glands open. Kangaroos are herbivorous, and, where still plentiful, a serious pest to settlers, whose rifles have, however, considerably reduced their number. The hindquarters of the large species supply a tolerable substitute for venison, while their tails make excellent soup, and their skins good rugs and leather. The kangaroo includes many species, varying in size from a hare to a large sheep, and remains of still larger and extinct species have been found in the pleistocene deposits of Australia. The larger and most common kinds belong to the genus *Macropus*, and include the giant kangaroo (*M. giganteus*), the red kangaroo (*M. rufus*), the brush kangaroo (*M. fruticus*). The tree kangaroos of New Guinea belong to the genus *Dendrogalus*; they have prehensile tails. The rock kangaroos of Northern Australia belong to the genus *Petrogale*.

Kangaroo Apple (*Solanum laciniatum*), a plant of the potato genus, belonging to Australasia and South America, with an edible fruit.

Kangaroo Grass (*Anthistiria Australis*), a tall and valuable fodder-grass of Australia, much liked by cattle.

Kangaroo Island, a long and barren island, area 1671 square miles, situated at the entrance to the St. Vincent Gulf, South Australia, 108 miles from Adelaide.

Kangaroo Rat (*Hypsiprymnus*), or more properly rat-kangaroo, a diminutive species of the kangaroo family, differing from the kangaroo proper in possessing canine teeth in the upper jaw, in its nocturnal habits, and its food, which consists chiefly of roots. Their movements are unlike those of the kangaroo. The little animals can sit erect upon their hind legs, but they are unable to make the vigorous leaps which are so characteristic of the kangaroo, nor can they manipulate their food with their forepaws and carry it to their mouth by means of these limbs. Their gait resembles a gallop rather than a series of leaps. They are very timid and harmless animals and have little of the fighting instinct, offering no resistance when captured. They seem to have a special fondness for potatoes and make havoc of the Australian kitchen gardens in their attempts to dig up and carry away the seed potatoes. In the United States the name is applied to a rat which inhabits the great plains near the Rocky Mountains and Mexico. It is a small animal, a little over four inches long, buff and white in color. It is a member of the Heteromyidæ family and is related to the jerboa (q. v.). *Kangaroo-mice* are smaller American rodents.

Kangra (kän'gra), a large district of Hindustan, in the Punjab, belonging mainly to the Himalayan chain; area, 9069 square miles. About a ninth is under cultivation, and large tracts are covered with forests. The inhabitants are a good-looking, fair-complexioned race, mild and peaceable, and much attached to their country. Pop. 768,124. Kangra, the capital, had a pop. in 1901 of 4746.

Kanizsa (kän'i-shä), market town of Hungary, district Zala, with large distilleries and fairs for grain, etc. Pop. 23,255.

Kankakee (kan-ka-kē), a city, capital of Kankakee County, Illinois, 56 miles s. s. w. of Chicago. It is the seat of the Eastern Illinois Hospital for the Insane. There are limestone quarries and manufactures of paper, horseshoe nails, furniture, agricultural implements, etc. Pop. 13,986.

Kano (kä-nō), a town and province of central Africa, Kingdom of Sokoto. Pop. of province est. at 2,250,000.

Kanoje (ka-nōj'), or KANAUJ, a town of Hindustan, N. W. Provinces, on a plain near the Ganges. It was once the capital of a great empire, but now consists chiefly of ruins which extend over several miles, though there is also a modern town with some manufactures. Pop. 16,646.

Kansas (kan'zas), one of the United States, bounded north by Nebraska, east by Missouri, south by Oklahoma, west by Colorado; area, 82,158 square miles. It consists chiefly of undulating plains, well watered by the Kansas, Arkansas and other rivers, the Missouri forming the boundary on the northeast. The soil is generally fertile, highly suitable for grain, vegetables and fruit, and cattle-raising is carried on very extensively. Kansas is one of the foremost agricultural States, especially in the production of corn. The climate is mild, and the winter short, but violent winds and sudden changes of temperature often mar the spring season. Although an agricultural State, Kansas has important and varied manufactures, the rivers supplying the motive power in many places. Slaughtering and meat-packing is an important industry, with by-products of soap and candles. Other industries are flour and grist-milling, car and shop construction. Bituminous coal, petroleum, building stone, lead, zinc, salt, etc., are among the minerals, and the production of cement has increased rapidly. Petroleum and natural gas are also valuable products. Education is well provided for, and there is a State university, an agricultural college, and other colleges and normal schools. There are over 900 miles of railroad. A law prohibiting the manufacture and importation of intoxicating liquors is in force, and generally observed. The chief towns are Kansas City, Topeka, Wichita, Leavenworth and Atchison, Topeka being the State capital. Kansas originally belonged to the Louisiana Territory. Settlers had entered it in considerable numbers by 1853, and in later years it became the scene of a local war between the slave-holding and antislavery settlers. 1861 it was admitted as one of the States of the Union. Pop. 1,690,949.

Kansas City, in Kansas, on the right bank of the Missouri, opposite Kansas City on the Kansas River, is the seat of immense stock and meat-packing industries, second only to Chicago. It has also an extensive grain and flour trade, car and repair shops, and many other industrial establishments. The city was incorporated in 1872, and subsequently enlarged by union with adjacent towns. Pop. 1914 (U. S. est.) 94,271.

Kansas City, a city of Missouri, on the frontier of Kansas and right bank of the Missouri, in the midst of a rich agricultural region, and forming a center in which sixteen railroads meet, thus making it a great emporium and distributing center for the adjacent states. It is the second largest city of the state, is chiefly built on the sides and top of a steep hill, has various prominent buildings and three fine parks. As a live-stock market it is one of the most important in the United States, and it is also a great beef and pork-packing center. It has a large trade in lumber, fruit, coal, agricultural implements, etc. It is surrounded by an active agricultural region, and is the largest winter wheat market in the world. Pop. 1914 (U. S. est.) 281,911.

Kansas River, a river of Kansas, formed by the junction of the Solomon and Smoky Hill, flows in an easterly direction, and falls into the Missouri near Kansas City.

Kansas-Nebraska Bill. The organization of Kansas and Nebraska as territories, in 1854, caused great discussion in Congress. The bill disregarded the Missouri Compromise, and the subject of establishing or excluding slavery was left to the decision of the people of those territories. The struggle to colonize Kansas led to a desperate conflict, in the end the party of freedom prevailing, and Kansas and Nebraska came into the Union as free states.

Kansoo, or KANSU (kän-sō), an inland province in the north of China; area, 86,608 square miles. It is mountainous, with the Hoang-ho for its principal river, and products of gold, mercury, silks, musk and tobacco. Pop. 1,386,000.

Kant, IMMANUEL, a celebrated German philosopher, the founder of the 'critical' or Kantian philosophy, born at Königsberg, Prussia, in 1724; died there in 1804. He early showed great application to study, and was sent to the Collegium Fredericianum, and then (in 1740)

to the university of his native city. His progress at college and at the university was rapid and brilliant, his studies embracing in particular mathematics and physics, as well as philosophy. Leaving the university after three years, he engaged in tuition, and it was not till 1755 that he took his degree. Soon after this he was appointed one of the teachers in the Königsberg University, and lectured on logic, metaphysics, mathematics and natural philosophy, to which, at subsequent periods, he added natural law, moral philosophy, natural theology and physical geography. In 1770 he became a full professor, obtaining the chair of logic and metaphysics, a post that he occupied till 1797. It is impossible within our space to give anything like an exposition of the philosophy of Kant, which has profoundly influenced all subsequent philosophical speculations. Dissatisfied with the dogmatisms of Wolff and the skep-

Immanuel Kant.

ticism of Hume, he set himself to investigate the field of metaphysics for himself, and in the first place proceeded to the examination of the origin, extent and limits of human knowledge. According to him, part of our knowledge is knowledge *a priori* or original, transcendental and independent of experience; part of it is *a posteriori*, or based on experience. What he calls the 'pure reason' has to do with the former. His great work named the *Kritik der reinen Vernunft*, 'Critique of Pure Reason' (first edition, Riga, 1781), contains the foundation for his whole system of philosophy. In the preface to a later work, the *Kritik der Urtheilskraft*, 'Critique of the Power of Judgment' (Berlin, 1790), he defines 'pure reason' thus: Pure reason is the faculty to understand by *a priori* principles: and the discussion of the possibility of these principles, and the delimitation of this faculty, constitute the critique of pure reason. In the first rank of such ideas as we do not derive from experience are *space* and *time*. Kant shows that all our perceptions are submitted to these two *forms*, hence he concludes that they are within us, and not in the objects; they are *necessary* and *pure intuitions* of the internal sense. The three original faculties, through the medium of which we acquire knowledge, are *sense*, *understanding*, *reason*. Sense, a passive and receptive faculty, has, as already stated, for its forms or conditions *space* and *time*. Understanding is an active or spontaneous faculty, and consists in the power of forming conceptions according to such categories as unity, plurality, causality, etc., which categories are applied to objects of experience through the medium of the two forms of perception, *space* and *time*. Reason is the third or highest degree of mental spontaneity, and consists in the power of forming ideas. As it is the province of the understanding to form the intuitions of sense into conceptions, so it is the business of reason to form conceptions into ideas. Far from rejecting experience, Kant considers the work of all our life but the action of our innate faculties on the conceptions which come to us from without. He proceeds in a similar way with morality; the idea of good and bad is a necessary condition, an original basis of moral, which is supposed in every one of our moral reflections, and not obtained by experience. He treats this part of his philosophy in his *Kritik der praktischen Vernunft*—'Critique of Practical Reason' (1788).

Kanuri (kä-nö'ri), or KANORI, a Soudanese people, who form the principal portion of the population of Bornu.

Kaolin (kä'u-lin), a name first given by the Chinese to a pure white clay used by them in the manufacture of porcelain. Kaolin is the result of the decomposition of granitic rock, containing felspar, mica and quartz. Similar clays, differing slightly in color and in the percentage of constituents, are found at Schneeberg in Saxony, furnishing the material of Dresden china; at Limoges, in France, employed for Limoges ware; and at St. Austell, in Cornwall, the source of supply for the British potteries. It is also found in enormous deposits in many parts of the United States, and is largely employed in pottery manufacture at Trenton, New Jersey, and East Liverpool, Ohio. In its natural state kaolin somewhat resembles mortar; by sorting and repeated filtration it is freed from all coarse ingredients, then dried in pans and sheds, and sent into the market cut into blocks.

Kapunda (ka-pun'da), a town in South Australia, 40 miles N. of Adelaide, famous for its copper mines. There are also quarries of fine marble. Pop. 1805.

Kapurthala (ka-pört'ha-la), a native state of India, province Punjab, between the Beas and the Sutlej rivers; area 598 square miles, pop. 314,341. The capital, Kapurthala, lies 65 miles east of Lahore and 8 miles from the left bank of the Beas. Pop. 18,519.

Karachi (ka-rä'chē). See *Kurrachee*.

Karaites (ka'rīts), a Jewish sect, founded about the middle of the eighth century by Anan Ben David, and which was for a long time the object of persecution by the orthodox Jews. They refuse to accept as divine or authoritative the traditions and doctrines of the Talmud, or those in the rabbinical writings, and adhere closely to the text and letter of the Old Testament. The sect never became very important, although thinly spread over many eastern countries. They are still found in Poland, Galicia, Alexandria and Constantinople; but their chief force is in the Crimea, where some thousands are said to exist.

Karakorum (kä-rä-kō'rum), a name sometimes given to the mountain range in Central Asia forming a sort of rampart between Cashmere and Eastern Turkestan, and forming the watershed between the Indus basin and that of the Tarim. The name is also given to a pass in this range, 18,000 feet above sea-level, on the direct road from India to Eastern Turkestan.

Karaman (kä-rä-män'), a town of Asiatic Turkey, in the pashalic of Karamania, in the valley of the Taurus chain, formerly the residence of the pasha. Pop. 8000.

Karamania, or CARAMANIA (kä-rä-mä'nē-ä), a vilayet of Asiatic Turkey, in Asia Minor. It is traversed from east to west by the Taurus range, covered with oak and pine forests, and watered by the Kizil-Irmak, the Syhoon, and other lesser rivers. The climate is genial, the soil rich, producing abundant harvests, and the vine and the fig grow in profusion. The chief occupation of the inhabitants, mostly Turkish, is the rearing of live stock. The capital is Konieh.

Karamsin (kä-räm'zēn), NICOLAI MICHAILOVICH, imperial Russian historiographer, born in a village of the government of Orenburg in 1765; died at St. Petersburg in 1826. He received a desultory education at a private school in Moscow, but made up the deficiency by extensive reading and continual travel. In 1792 he founded the Moscow *Journal*, and in subsequent years several literary periodicals. He did much to purify his native language, and gave a fresh impetus to Russian literature. His title to fame rests on his *History of the Russian Empire* (12 vols., St. Petersburg, 1816-24), a work written in fine style, with impartiality and penetration, and translated into several other languages, including English.

Kara-Su-Bazar (kä-rä-sö-bä-zar'), a Russian town in the Crimea, formerly a very important market, but its commerce is declining. Pop. 12,961.

Karatchef (kä-rät-chef'), a town of Russia, government of Orel. Pop. 15,605.

Karauli (ka-rou'lē), a town of India, in Rajputana, capital of native state of same name, surrounded by walls and a moat, and containing a palace, handsome temples, etc. Pop. 23,482. The state, which is under the superintendence of the Bhurtpore and Karauli Agency, has an area of 1206 square miles, and a pop. of 156,786.

Karens (kä'rens), a pagan tribe of Burmah, formerly confined to a region beyond the Salween River, called Karen-ni, on the borders of Burmah and Siam, but now distributed over various parts of Burmah. They are an intelligent and industrious race, many of them having become Christianised, chiefly through the agency of American missionaries. They are estimated at about 100,000, but the Karen dialect is stated to be spoken by six times that number.

Karikal (kä-rē-käl'), or CARICAL, a small French settlement in India, in the Carnatic, on the Coromandel coast, 150 miles S. of Madras. Area, 62 square miles; pop. 56,595.—KARIKAL, the capital, on the Cavery delta, has a pop. of 18,038, and a large export trade, chiefly in rice.

Karli (kär'lē), a celebrated Buddhist cave-temple of India, Poonah district of Bombay Presidency. It is rich in sculpture, and is divided, like a church, into nave and aisles, with an apse.

Karma (kär'ma), a Sanskrit word signifying the Brahministic conception of the future state of mankind. It expressed the whole of the actions, good and bad, which determine the soul's destiny. It was borrowed by the Buddhists and developed into an elaborate ethical speculation, the cause which influences every action or event; the sum

of all merits and demerits. It arises from ignorance and may be overcome by right living and right thinking, the ultimate state being that known as Nirvana. See *Buddhism*.

Karlsbad, Karlsruhe, Karlstadt. See *Carlsbad*, etc.

Cave at Karli.

Karmathians (kär-mä'thi-ans), once a powerful Mohammedan sect, founded in Irak by Hamdan Karmat during the ninth century, who adopted the doctrines of the Ismailis, and introduced communism among his rapidly increasing flock. Missionaries were trained to spread his creed, and one of them, Abu Said, gained a strong hold on the people of the Persian Gulf. The caliph, afraid of the influence of the new sect, sent an army for its suppression, but he was defeated, and Abu Said took possession of the whole country. His son Abu Tahir, who succeeded him, made further conquests, and became master of almost all Arabia, Syria and Irak; but under his successors this power rapidly declined, and was finally broken towards the end of the tenth century.

Karnak. See *Thebes*.

Karnal (kar-näl'), an Indian town and district, in the Punjab; area of district, 2396 square miles; pop. 883,225.—KARNAL, the headquarters of the district, trades largely with Delhi and Umballa. Pop. 23,559.

Karnul, or KARNOOL (kar-nöl'), a town in India, in the presidency of Madras, situated in the fork formed by the junction of the Hundri with the Tungabhadra, with a dismantled fort. Pop. 25,376. The district has an area of 7788 square miles; a pop. of 818,000.

Karr, JEAN BAPTISTE ALPHONSE, a French journalist and romance writer, born in 1808, and educated at the Collège Bourbon, Paris. In 1832 appeared his first novel, *Sous les Tilleuls*, originally written in verse, and which at once brought him into notice. Numerous other works followed in rapid succession, and he also contributed largely to journals and reviews, including the *Revue des Deux Mondes*. In 1835 he became editor of the *Figaro*, and in 1839 commenced in it the fortnightly *Guêpes* ('Wasps'), a publication which attracted much attention for a time by its witty and humorous anecdotes and character sketches, and brought him considerable profit and much ill-will. In 1855 he retired to Nice, where he finally became an enthusiastic grower of fruit and flowers. Died in 1890. His daughter, THÉRÈSE KARR, has published several works.

Karri (kar'i), a valuable timber largely exported from Western Australia to Europe and America, and obtaned from an enormous tree belonging to the Eucalyptus family.

Karroos (kar'rös), the name given in South Africa to the elevated tablelands, 3000 to 4000 feet above sea-level, lying between the mountain ranges. The soil is shallow but rich, and during the rainy season, or when artificially watered, vegetation is most profuse. The Karroos form excellent pasturage for cattle, sheep and Angora goats; and great tracts are now occupied as farms, the uncertain rainfall being supplemented by permanent springs and large reservoirs. The 'Great Karroo,' in Cape Colony, extends from east to west for 300 miles, with a breadth of 70 miles.

Kars (kärs), a town on the Russo-Turkish frontier in Asia, formerly a Turkish fortress, and the scene of several gallant defenses. Captured and annexed by the Russians in November, 1878, it has become the capital of a Russian province of the same name; area, 7308 square miles, pop. 349,100. It has since been connected with Batoum and Tiflis by military roads, and the fortifications have been much enlarged and strengthened. Pop. (1916) 35,462.

Karst (kärst), a mountain or elevated region of Austria, northeast of the Adriatic, in the Coast Lands, Carniola, Croatia and Dalmatia.

Kartarpur (kar'tär-pör), a town of India, Punjab, heredi-

tary residence of the *guru* or high priest of the Sikhs. Pop. 10,840.

Kartikeya (kär-ti-kā'ya), the Hindu god of war. He is represented riding on a peacock, with six heads and twelve hands, in which numerous weapons are brandished.

Karun (ka-rön'), a navigable river of Southwestern Persia, falling into the Shatt-el-Arab, or joint stream of the Euphrates and Tigris. It has recently been opened to foreign trade as far as Ahwaz.

Karwar (kär-wär'), a seaport of India, Bombay Presidency, with a safe harbor and a good trade. Pop. 16,847.

Kasbin. See *Kasvin.*

Kaschau (kä-shou'), a town of Hungary, capital of the county of Abaujvar. It is beautifully situated, surrounded by vineyards, and one of the best-built towns in Hungary. Pop. 40,102.

Kasganj (käs-zanj'), a town of India, N. W. Provinces; well built, with a good trade in grain and sugar. Pop. 19,686.

Kashan (kä-shän'), a town of Persia, province of Irak-Ajemi, in a fertile plain 90 miles south from Ispahan. It is regularly built, has many fine mosques, etc., and its silks, carpets, jewelry, etc., are much esteemed. Pop. 35,000.

Kashgar (käsh-gär'), a Chinese town of Central Asia, in Eastern Turkestan, on a river of the same name, with considerable manufactures of cotton, linen, gold and silver cloths, carpets, etc., and an extensive trade, its position at the junction of several great routes making it the emporium of much of the commerce of Central Asia. Pop. estimated about 60,000.

Kashkar (käsh-kär'; *Ovis Poli*), a large species of sheep inhabiting the lofty plateaus of Central Asia. The male has very large horns bent circularly, while the female has horns resembling those of a goat.

Kashmir (kash-mēr'). See *Cashmere.*

Kasipur (kä'sē-pōr), a town of India, N. W. Provinces, a great place of Hindu pilgrimage. Pop. 14,667.

Kassai (kas-sē'), a river of Southern Africa, a tributary of the Sankulla, and thus belonging to the Congo system.

Kassala (kas-sä'la), a town in Nubia, on the Mareb, a tributary of the Nile, 250 miles east of Khartoum, and about the same distance west of Massowah. It was formerly a place of importance, but has greatly declined since the rising of the mahdi. Pop. 20,000.

Kassel. See *Cassel.*

Kassimof (käs-si-mof'), a town of Russia, in the government of and 70 miles E. N. E. of Riazan, on the Oka. It has a large trade, and carries on tanning, boot and shoe manufacture, etc. Pop. 13,545.

Kastamuni (käs-tä-mö'nē), a town of Asia Minor, capital of the Turkish vilayet of same name, 100 miles N. N. E. of Angora. Pop. estimated at 16,000.

Kasur (ka-sör), a town of India, Lahore district, Punjab.

Kater (kā'ter), HENRY, an English writer on physics, born at Bristol in 1777; died in London 1835. He joined the Indian army, gained the rank of captain, and rendered great service by his trigonometrical surveys. He retired in 1814, and devoted his time to scientific pursuits—the seconds pendulum, terrestrial gravity, etc.

Katrine (kat'rin), LOCH, a picturesque and much-frequented lake, Scotland, county of Perth, 5 miles east of Loch Lomond; 10 miles long, in some places 2 miles broad, encircled by lofty mountains and rocky ravines clothed with trees. At its east end is the celebrated pass of the Trossachs, rendered famous by Scott's *Lady of the Lake.* Through this pass a stream flows, carrying the surplus waters of the lake to Loch Achray. The water-supply to the city of Glasgow is drawn from Loch Katrine.

Katsura (kät'sö-rä), PRINCE TARO, a Japanese soldier and statesman, one of the leaders of the transition period; born in 1847; died October 10, 1913. After many years of varied service he became Minister of War (1898-1900) and Premier of Japan (1901-1905). In 1912 he was chosen Premier for the third time, but resigned within a few months.

Kattywar, or KATHIAWAR (kät-hi-ä-wär'), a peninsula of Hindustan, Bombay Presidency, between the Gulf of Cambay and the Runn of Cutch. Most of it is occupied by the Kattywar Agency, formed by numerous small native states of Guzerat, many of which are tributaries to the British government, to the Gaekwar of Baroda, or to the Nawab of Junagárh. The surface is generally undulating, the soil sandy and productive only where irrigated. Cotton is the principal crop. Area about 22,000 square miles. Pop. 2,752,000.

Katwijk (kät'wik), a place on the coast of Holland, near where the Rhine enters the sea by means of

sluices, now much frequented for sea-bathing.

Katydid (kā'ti-did; *Platyphyllum concavum*), a species of grasshopper of a pale green color, body about an inch long, found in many parts of the United States, and so named from the sound of its note. This is produced by the friction of the taborets in the triangular overlapping portion of each wing-cover against the other, and is strengthened by the escape of air from the sacs of the body, so as to be heard on a quiet night at a quarter of a mile distance. The females are noiseless.

Katzbach (kâts'bâh), a small river of Prussia, in Silesia, passing near Liegnitz, famous for the important and decisive victory which the Prussians under Blücher gained, August 26, 1813, over the French under Macdonald.

Kauai (kou'I), the most northwesterly island of the Sandwich group, 64 miles W. N. W. of Oahu, and 590 sq. miles in area. It is of volcanic formation, its extreme altitude being 6000 feet. Its soil is in places very productive, yielding coffee, rice and sugar. Pop. 20,734.

Kaufmann (kouf'man), MARIE ANGELICA, a distinguished painter, born at Coire, Switzerland, in 1741; died at Rome in 1807. She received instruction in drawing and painting from her father, himself a painter, and before the age of twenty she had become famous. The study of the Italian masters perfected her style, and while at Venice she was induced to go to London (in 1765), where she had a very successful career. Sir Joshua Reynolds is said to have been in love with her, but she married a Swedish adventurer calling himself Count Horn, from whom she afterwards obtained a divorce. In 1781 she married a Venetian landscape painter named Zucchi, returned the following year to Italy, and finally settled in Rome. She is at her best in ideal figures, her faces are tender and elevating, her grouping and draping excellent, but her design often lacks energy and firmness, while her coloring is rather too brilliant. She was one of the original members of the Royal Academy.

Kaukauna (kạ-kạ'na), a city of Outagamie County, Wisconsin, on the Fox River, 7 miles N. E. of Appleton. There are paper and pulp mills, machine shops, etc. Pop. 5115.

Kaulbach (koul'bâh), WILHELM VON, one of the greatest of modern German painters, born at Arolsen, Waldeck, in 1805; died at Munich of cholera in 1874. He studied at the art academy of Düsseldorf under Cornelius, whom he assisted in the execution of the frescoes of the Glyptothek or gallery at Munich, and subsequently succeeded in the Munich Academy. The desire of King Ludwig of Bavaria to make Munich the center of German art afforded free scope for his genius, and he was long engaged in the decoration of the Hofgarten, the Odeon, the palaces of Maximilian and Ludwig, and the new Pinacothek, for which he did the series of designs of contemporary groups of artists, architects, etc., executed in fresco on the exterior. His most ambitious pictures, with the exception of the *Madhouse* (1828), are to be found in a series (utilized in the decoration of the Berlin Museum) seeking to depict the progress of the human race in typical scenes from the great historic periods, and comprising the *Tower of Babel*, *Age of Homer*, *Destruction of Jerusalem*, *Battle of the Huns and Romans*, *The Crusades* and *The Reformation* (1834-63). Besides these, however, he left a large number of portraits, designs and illustrations of books, including the *Reineke Fuchs*, the Gospels, and the works of Shakespere, Goethe and Schiller. As a colorist he was of inferior rank, his main strength lying in form and composition. In choice and handling of themes he showed the width of range of a mind of very high order, essaying with exceptional success all styles of his art from Michael Angelo to Hogarth; but the artistic value of his work is often lessened by a tendency to symbolism and allegory, and a too obvious straining after an idea. He belongs in the class or stands in the transition from the idealism of Cornelius to the more realistic schools of modern historical painters.

Wilhelm von Kaulbach.

Kauri Pine (kou'ri), (*Dammāra Australis*), a tree peculiar to New Zealand, and found there only at the northern extremity of the North Island. It reaches the height of 150 feet, and its timber is much valued for building purposes, for making furniture, etc., but unfortunately the supply is not likely to hold out long. The resin of this tree, the kauri gum, forms a valuable export, and is used in making fine varnish, etc. Most of it is obtained in a fossil state, by digging.

Kava. See *Ava-ava.*

Kavanagh (kav'a-nä), JULIA, a British novelist, born at Thurles (Tipperary) in 1824; died at Nice, in 1877. She was educated and lived much in Paris. *Madeleine, Natalie* and *Daisy Burns* are some of her best novels, while *Women in France of the Eighteenth Century* is an excellent biographical work.

Kaveri. See *Cavery.*

Kaye (kā), SIR JOHN WILLIAM, an English writer, born in 1814; died in 1876. He was educated at Eton and Addiscombe Military College, served as an officer in India until 1841, entered the civil service of the East India Company in London 1856, and became a secretary at the India office in the following year. He was a shrewd observer, and made good use of his Indian, military and official experience in the production of many historical and biographical works, chief among which are his *Histories of Afghanistan*, of the *East India Company* and of the *Sepoy War.*

Kazan (ka-zän'), a city of European Russia, capital of the gov. of same name, situated on the Kasanka, about 4 miles above its junction with the Volga. It is an extensive city, strongly fortified, with large wool-combing, weaving and dyeing establishments, tanneries and soapworks, and a government dockyard in its vicinity. The timber, flour and hemp fairs of Kazan are of the largest in the Russian Empire. The university is a great seat for oriental learning, with nearly 1000 students. Pop. 188,100.—The government is surrounded by the governments of Viatka, Orenburg, Nijni-Novgorod and Simbirsk; area, 24,600; pop. 2,504,400. It is well watered by the Volga, the Kama, the Sura, the Viatka, the Kasanka; the climate is temperate; agriculture, cattle-raising and fishing are the chief occupations.

Kazanlik (ka-san-lik'), a town of Eastern Roumelia, at the foot of the Balkans. It is noted for its manufacture of attar of roses. The valley of the river Qunja, near by, is a vast garden of roses. Pop. 10,765.

Kazvin (käz'vēn), a town of Persia, prov. Irak-Ajemi, 90 miles northwest of Teheran. It has been greatly devastated by earthquakes, but has still a considerable trade. Pop. about 50,000.

Kea (kē'a), a genus of parrots (*Nestor*) of New Zealand, of which only three species are known. *N. notabilis*, formerly a vegetable and insect eater, began to feed on offal after the introduction of sheep, and later developed the habit of attacking live sheep, worrying weak ones to death, after which they devour the kidney fat.

Kean (kēn), CHARLES JOHN, actor, son of the celebrated Edmund Kean, born at Waterford in 1811; died at London in 1868. He was educated at Eton, but being thrown on his own resources in 1827 he took to the stage, and made his *début* at Drury Lane as *Young Norval.* In 1830 he visited America, established his reputation, and reappeared as a leading actor in London in 1838, among his parts being *Hamlet* and *Richard III.* He married the accomplished actress Ellen Tree in 1842, revisited the United States in 1845, and in 1851 became sole lessee of the Princess Theater, London, where he put some of Shakespere's plays on the stage with a splendor never before attempted. In 1863 he made a tour of Australia, California, Jamaica, the United States, Canada, etc., which proved a great financial success. On his return he continued to play in London and the provinces until a short time before his death. He inherited little of his father's genius, and his success was largely due to effective staging.

Kean, EDMUND, the most brilliant tragic actor of his age, born at London in 1787 or 1789; died at Richmond, in 1833. His parents were poor and connected in a low capacity with the theatrical profession. At two years of age he was placed in a pantomime, at seven he went to school, but ran away, and for a short time he was a cabin boy in a vessel. Returning to the boards, he ultimately obtained an engagement at one of the minor London theaters. When not yet thirteen years of age he managed to please his country audiences as *Hamlet, Cato*, etc., and in Windsor he gained the applause of the royal family in *Richard III.* In 1814 he appeared at Drury Lane as *Shylock* and *Richard III.* His success was sudden and unexampled, and was equally great in other parts, including *Othello, Hamlet, Macbeth, Iago, Lear*, etc.

Kearney (kär'ni), a city, capital of Buffalo County, Nebraska, 195 miles w. of Omaha. It has a State industrial school, a military academy, etc., has excellent water power and various industries, and is an important shipping point for grain. Pop. 6202.

Kearny, a town of Hudson County, New Jersey, on the Passaic River, opposite Newark. Has manufactures of yarn, linoleum, chemicals, small metal goods, wire, etc. Pop. 18,659.

Kearny, PHILIP, soldier, was born at New York City in 1815. In 1839 he served in the French army with distinguished gallantry, as also through the Mexican war; afterward participating in the war in Italy in 1859. In the Civil war his daring courage manifested itself. He was killed in the engagement at Chantilly, September 1, 1862.

Kearny, STEPHEN WATTS, soldier, an uncle of the preceding, was born at Newark, New Jersey, in 1794; died in 1848. Entering the army as lieutenant in 1812, he distinguished himself at Queenstown. In 1846, during the Mexican war, he led an army to New Mexico and conquered that province. In 1847 he was for a time governor of California.

Kearsarge (kēr'särj), the name of two mountains, of New Hampshire, one in Carroll County, 3250 feet high, the other in Merrimac County, 2950 feet high. The name was given to one of the warships of the Civil war, the only one that took part on the Union side in an ocean battle, its opponent being the Confederate privateer *Alabama*. The fight took place on the coast of Cherbourg, France, June 19, 1864, and ended in the sinking of the *Alabama*, its officers and crew being rescued. The *Kearsarge* was wrecked on a reef in the Caribbean Sea in 1894, and its name was transferred to a steel-clad battleship of the United States navy, launched in 1898. This is the only American battleship which does not bear the name of one of the States.

Keats (kēts), JOHN, an English poet, was the son of a livery-stable proprietor, and was born at London in 1795; died at Rome in 1821. In 1803-09 he was at a school at Enfield, after which he was apprenticed to a surgeon. This profession was not congenial, and he got his indentures canceled, but continued his medical training at Guy's Hospital till about 1817. He now devoted himself entirely to literature, having as friends or acquaintances Leigh Hunt, Shelley, and other distinguished authors. His first volume of poems came out in 1817. *Endymion, a Poetic Romance*, appeared in 1818; his last volume of poetry, containing *Lamia, Isabella, The Eve of St. Agnes, Hyperion*, and other poems in 1820. By this time he had become so ill of consumption (which had also afflicted his mother) that he was advised to seek a warmer climate; but it was too late, and though he reached Rome he only survived a short time. Shelley honored his memory by his elegy *Adonais*. Keats charms by his love of nature, his keen, sensuous perception, and his sweet harmony; but his beautiful thoughts are often hidden by wild fancies, while errors of taste and faults of diction abound in his poetry. But his later works are free of many of the faults of the earlier productions, and place him in the front rank of the poets of his age.

Kebla. See *Kaaba*.

Keble (kē'bl), JOHN, an English divine and poet, born in 1792; died in 1866. He gained his bachelor's degree at Oxford University, 1810, where he became afterwards public examiner and professor of poetry. In 1835 he obtained the living of Hursley, near Winchester, which he held until his death. As a zealous high churchman he was associated with Newman and Pusey in getting up the famous *Tracts for the Times* (1833). His reputation is chiefly due to his well-known volume of hymns, *The Christian Year*. He also wrote *Lyra Innocentium*, a series of poems on children, *Sermons*, etc. Keble College, Oxford, was established in honor of his memory.

Kecskemét (kech'ke-met), one of the largest market towns of Hungary, 50 miles southeast of Budapest. It has an extensive trade in horses and cattle, and much-frequented fairs. Pop. (1910) 66,834.

Kedge (kedj), a small anchor used to keep a ship steady and clear from her bower anchor, while she rides in a harbor or river, also in removing her from one part of a harbor to another. See *Anchor*.

Keel (kēl), the bottom timber in a wooden vessel which forms the main support and connection of the whole fabric. It is generally composed of several thick pieces of timber placed lengthways, scarfed and bolted together. A piece bolted to the bottom of the keel is called the *false keel*, and an internal piece, also bolted to the keel, is called the *keelson*. In iron vessels the arrangement of parts is altogether different.

Keelhauling, a mode of punishment in the British navy in the seventeenth and eighteenth centuries.

The culprit was suspended from a yard-arm, then dropped into the water and hauled under the keel up to the yard-arm on the other side. On small fore-and-aft vessels he was let down at the bows and drawn aft by a hauling line under the keel to the stern.

Keeling Islands (kēl'ing), or Cocos Islands, a small group of coral islands in the Indian Ocean, south of Sumatra, discovered by William Keeling in 1609, belonging to Britain, and since 1885 a dependency of the Straits Settlements; area about 9 square miles, pop. about 500, partly consisting of members of a family of the name of Ross, who manage all the affairs of the islands, but chiefly of Malays born on the islands, and a smaller number of imported Java coolies. The islands form a sort of horseshoe, enclosing a lagoon. They are all thickly planted with cocoanuts, which form the principal product. Rice is the chief import. The sea teems with fish, which are largely caught. Poultry, sheep and rabbits have been introduced.

Keen, William W., an eminent surgeon, born at Philadelphia, Pennsylvania, in 1837. He was graduated at Jefferson Medical College, was assistant surgeon to a Massachusetts regiment in 1861, and afterwards acting assistant surgeon in the U. S. army. His studies were devoted to the surgery of the nervous system and he was a pioneer in cerebral surgery. In 1891 he proposed relieving spasmodic wryneck by the excision of the nerves concerned. He also experimented in the injection of filtered air to determine rupture of the bladder.

Keene, Laura, actress, born in England in 1820, came to the United States in 1852, and made this country her home until her death in 1873. She became popular as an actress and manager, being manager of the Varieties Theater in New York and afterwards of the Olympic, known also as 'Laura Keene's Theater.' Here *Our American Cousin* was first produced. It was during the production of this play at Ford's Theater, Washington, that President Lincoln was assassinated, Mrs. Keene, one of the actors, being among the first to reach his side.

Keene, a city, capital of Cheshire County, New Hampshire, 50 miles w. s. w. of Concord. It has railroad repair shops and manufactures of pottery, furniture, woolen goods, boots and shoes, wooden wares, etc. Pop. 10,068.

Keep (kēp), in castles of the old type, a kind of strong tower, to which the besieged retreated and made their last efforts of defense.

Keeper of the Great Seal, in England, so called because the sovereign's great seal is delivered into his custody. See *Chancellor.* The Keeper of the Privy Seal is an official through whose hands pass all charters signed by the king, before they come to the great seal.

Keewat'in. See *Keewatin.*

Kehl (kāl), a town of Baden, at the confluence of the Kinzig and Schulter with the Rhine, opposite Strasburg, once an important fortress, but its fortifications have been dismantled. Pop. 4000.

Keighley (kē'lā), or Keithley (kēth'lā), a municipal borough of England, West Riding of York; the headquarters of the worsted spinning trade. There are also several paper and corn mills machine and tool factories. Pop. 71,980.

Kei River (kā), Great, in Southeast Africa, formerly the boundary between British Kaffraria and Kaffraria Proper, rises with its branches, the Black and White Kei, in the Stormbergen Mountains, and flows southeast into the Indian Ocean.

Keiskama (kēs-ka'ma), a river in South Africa, formerly the boundary between Cape Colony and British Kaffraria.

Keith (kēth), a town of Scotland, partly in Banff, partly in Elginshire, on the Isla, 15 miles s. e. of Elgin. It has flour-mills, some spinning and weaving of wool, and other industries. Pop. 4753.

Keith (kēth), James, a distinguished soldier, born in Scotland in 1696; died in the battle of Hochkirch in 1758. He was the son of William Keith, earl-marischal of the kingdom, and when 19 fought in the battle of Sheriffmuir for the Pretender. Outlawed and his property confiscated, he fled to France, saw military duty in Spain and Russia, and in 1747 transferred his services to Prussia, where he became field marshal and confidential adviser of Frederick the Great. In 1749 he was governor of Berlin. He was esteemed by Frederick, who made him his companion.

Kelat (ke-lăt'), or Khelat', a town of Beluchistan, capital of the territories of the Khan of Khelat, occupies the side of a hill at a height of nearly 7000 feet above the sea. It is surrounded by a mud wall flanked with bastions, and the streets are narrow and filthy. The manufactures consist chiefly

of muskets and sword cutlery; and there is a small trade with Sind, Bombay and Candahar. Kelat was stormed by the British in 1839, recaptured by insurgents from a weak garrison of Sepoys, and again taken by the British. Pop. estimated at 12,000.

Keller, Gottfried, a Swiss novelist, born in 1819; died in 1890. The success of a volume of poems was followed in 1854 with the publication of the novel, *Der grüne Heinrich*. His collected works appeared in eleven volumes, 1889-1904.

Keller, Helen Adams, an American author, born at Tuscumbia, Alabama in 1880. After an attack of scarlet fever at the age of two she lost the senses of sight, hearing and smell. She was instructed by Miss Anne M. Sullivan; studied at the Perkins Institution, Boston, at the Horace Mann School, New York, and under Miss Sarah Fuller at the Wright Humason School. She was graduated from Radcliffe College in 1904 and is the most remarkable success ever attained in the education of a deaf mute. Her published works include *The Story of My Life* (1902), and *The World I Live In* (1908).

Kellermann (kā-ler-mon), François Christophe, Duke of Valmy, marshal and peer of France, born in 1735; died in 1820. In 1792 he received the command of the army of the Moselle, and sustained the 'cannonade of Valmy,' which caused the allies to retreat. In the following wars Kellermann received various commands, and Napoleon loaded him with honors. After the restoration of the Bourbons he was appointed a member of the chamber of peers.

Kellogg (kel'og), Clara Louise, born at Sumterville, South Carolina, in 1842, appeared in opera in New York in 1861, and afterwards sang with great success in the principal cities of Europe and America. For years she conducted an English opera company of her own. In 1887 she married Carl Strakosch and retired. Died, May 12, 1916.

Kells (kels; originally *Kenlis*), a town of Ireland, County Meath, picturesquely situated on a small hill near the Blackwater, 36 miles northwest of Dublin. It is a very ancient town, and contains many interesting antiques.

Kelp, In commerce, the crude alkaline substance obtained by burning sea-weeds, chiefly of the species *Fucus serrātus*, *F. vesiculōsus*, *F. nodōsus*, *Laminaria bulbōsa*, *L. digitāta*. The sea-weed is gathered during the summer, dried on the shore, then stacked under shelter for some weeks until it becomes covered with a white, saline efflorescence, when it is ready for burning, which is effected in a round, brick-lined pit, or oblong kiln. As the weed softens, it is well stirred with a heated iron until it becomes a semifluid mass; it is then cooled and broken into pieces ready for the market. When salt was dear, the bulk of soda used in soapmaking was obtained from kelp and barilla, and the kelp manufacture was a source of large profit in Ireland, Scotland and the Hebrides; but since soda can be manufactured from salt much cheaper, it has ceased to be a flourishing industry. Kelp is now chiefly used for the production of iodine and chloride of potassium; a ton of kelp yields about 8 lbs. of iodine.

Kelso (kel'sō), a Scottish town in Roxburghshire, situated at the confluence of the Teviot and Tweed, on the left bank of the latter, 38 miles s. e. of Edinburgh. In the outskirts of the town are the magnificent ruins of Kelso Abbey, founded and endowed by David I in 1128. It is in the form of a Latin cross, and is a fine specimen of the Norman style of architecture. In the immediate vicinity is Floors Castle, the seat of the ducal family of Roxburgh. Pop. 4008.

Kelts. See *Celts*.

Kelung (kel-ung'), a town and seaport of Japan, in the northern part of the island of Formosa. Coal fields are worked by the Chinese in the neighborhood, and large quantities of coal are exported. There is also an extensive export trade in rice, sugar and camphor. Pop. about 5000.

Kelvin, Lord. See *Thompson, Sir William*.

Kemble (kim'bl), Charles, an English actor, born in 1775; died in 1854, a younger brother of John Phillip Kemble. He was educated at Douay (France), returned to England 1792, obtained a situation in the post-office, but relinquished it in favor of the stage in 1794, when he made his first appearance at Drury Lane. His success was largely due to his representations of such characters as *Edgar*, *Romeo*, *Charles Surface*, *Antony*, etc.; and to his fine voice, handsome face and figure. He was appointed censor of plays in 1840, when he retired from the stage, and only gave occasional Shakesperean readings. He had married the favorite actress Miss de Camp in 1806, by whom he was the father of John Mitchell Kemble, Frances Anne Kemble and Adelaide Kemble.

Kemble, FRANCES ANNE, popularly known as Fanny Kemble, writer and actress, eldest daughter of Charles Kemble, and niece of Mrs. Siddons, was born at London in 1811. Her father being in financial difficulties, she was induced to appear on the stage, which she did in 1829 at Covent Garden as *Juliet*, and her success was so great that in the course of three years she managed to relieve the fallen fortunes of the family. Her trip to America in company with her father was also a splendid triumph, and while there she contracted an unfortunate marriage (1834), which was annulled by divorce 15 years afterwards. She retired for many years to Lenox (Mass.), where she was busy with her pen. She returned to London in 1847, and from that time she resided alternately in America, England and the Continent, appearing at intervals as a public reader. Of her most successful writings are the tragedy *Francis I* (in which she herself acted the part of Louis of Savoy); *Journal of a Residence in the United States; Journal of a Residence on a Georgia Plantation; Records of a Girlhood; Records of Later Life;* and her *Notes* on some of Shakespere's plays. As an actress she excelled in the characters of *Portia, Beatrice, Lady Macbeth, Lady Teasle* and of *Julia* in the *Hunchback*. She died in 1893.—Her sister ADELAIDE, born in 1820, greatly distinguished herself on the operatic stage, but retired on her marriage in 1843.

Kemble, JOHN MITCHELL, an eminent Anglo-Saxon scholar, son of Charles Kemble, born in 1807; died in 1857. He was graduated at Cambridge, and, having taken up the study of Anglo-Saxon, spent a considerable time in studying the ancient MSS. in the libraries there. He edited *Beowulf* and other Anglo-Saxon works, including an incomplete edition of the *Anglo-Saxon Gospels*, and a collection of all the known charters of the Anglo-Saxon period, under the title of *Codex Diplomaticus Ævi Saxonici*. Perhaps his most valuable work is the *Saxons in England* (London, 1849, 2 vols.). For a number of years he edited the *British and Foreign Review*, and later he acted as censor of plays.

Kemble, JOHN PHILIP, one of the most eminent tragedians of the British stage, eldest son of Roger Kemble (manager of a provincial theatrical company), was born at Preston in 1757; died at Lausanne in 1823. Being intended for the church, he was sent to the Roman Catholic college of Douay (France), where he distinguished himself by his fine elocution; but, in spite of his parents' opposition, he selected the stage as a profession, made his first appearance at Drury Lane in 1783, and became at once popular. He was afterwards manager of this theater in 1788-1802. From 1801 to 1803 he made a most successful tour in France and Spain, and on his return to London purchased a share in the Covent Garden Theater, and made himself a splendid reputation in the characters of *Julius Cæsar, Hamlet, Macbeth, Coriolanus*, etc. His theater having been burned down, he opened the new edifice in 1809 with an increase of prices, which, together with certain other obnoxious arrangements, created for a series of nights the notable disturbances known by the name of the *O. P.* (*old price*) *riots*. He abandoned the stage in 1817, and received many tokens of esteem from his numerous admirers on that occasion. His statue was placed in Westminster Abbey in 1833. His acting was distinguished for dignity, precision and studious preparation, but was wanting in fire and pathos. His sister, SARAH, was the celebrated Mrs. Siddons.

Kempen (kem'pen), a manufacturing town in Rhenish Prussia, 20 miles N. W. of Düsseldorf, celebrated as the birth place of Thomas à Kempis (1380). Pop. 6319. There is another town of the same name in the Prussian province of Posen. Pop. 5787.

Kempis, THOMAS A. See *Thomas à Kempis*.

Kempten (kemp'ten), a fortified Bavarian town on the Iller, which is here navigable, 65 miles S. W. of Munich. It has large cotton mills, woolen and linen factories, and much-frequented fairs. Pop. 20,663.

Ken, THOMAS, an English prelate of great learning and moral worth, born in 1637; died in 1711. After studying at Oxford he became successively chaplain to the Princess of Orange, to the Earl of Dartmouth, and in 1684 to Charles II, who made him Bishop of Bath and Wells. In 1688 he was sent to the tower for resisting the dispensing power claimed by James II, and yet some months later he refused to take the oath of allegiance to William of Orange, and was dispossessed of his see; but Queen Anne granted him a pension. His sermons and moral treatises have long been forgotten, but his morning and evening hymns are still cherished in many a household.

Kendal (ken'dal), or KIRKBY-KENDAL, an English manufacturing town, County Westmoreland, agreeably situated on the Kent. The Flemings settled here in 1337 and the town became famous for its woolens and 'Kendal-

green' buckram. Among its manufactures are serges, carpets, tweeds, knitted goods, fish hooks, etc. Pop. (1911) 14,088.

Kenia (kā'nē-a), an isolated mountain mass in Eastern Africa, only a few miles south of the equator, about 18,000 feet high.

Kenilworth (ken-il'worth), a town of England, in Warwickshire, 4 miles north of Warwick. Kenilworth Castle, now a magnificent ivy-covered ruin, was founded in the reign of Henry I. The gorgeous entertainment given here in 1575 to Queen Elizabeth by the Earl of Leicester is familiar to all readers of Scott's *Kenilworth*. Pop. 5776.

Kennebec (ken-e-bek'), a river of Maine, rises in Moosehead Lake, and after a course of 150 miles, mostly S. S. E., empties itself into the Atlantic 12 miles below Bath. It is navigable for ships as far as Bath and for steamers to Hallowell, 40 miles.

Kennedy, JOHN PENDLETON, statesman and author, was born at Baltimore, Maryland, in 1795; died in 1870. He served in the war of 1812, was elected in 1820 to the Maryland legislature, and was subsequently three times elected to the United States House of Representatives, where he actively supported the Whig policies. In 1852 he was made Secretary of the Navy. He published several popular novels, the best known being *Swallow Barn* and *Horse-Shoe Robinson*, also a *Life of William Wirt* and other works.

Kensett, JOHN FREDERICK, landscape painter, born in Cheshire, Connecticut, in 1818; died in 1872. He studied in London and Rome, among his best works being *Sunset in the Adirondacks*, *Franconia Mountains* and *Hudson River from Fort Putnam*.

Kenneh (ken'e), or KENEH, a town of Upper Egypt, on the right bank of the Nile, well known for its pottery manufacture.

Kennicott (ken'i-kot), BENJAMIN, an English divine, professor of theology at Oxford, born in 1718; died at Oxford in 1783. He is best known by his edition of the Hebrew text of the Bible, the finest edition extant.

Kenora (ke-nō'ra), a town, province of Ontario, Canada. Pop. (1911) 6158.

Kenosha (ke-nō'sha), county seat of Kenosha County, Wisconsin, on Lake Michigan, 51 miles north of Chicago, on the Chicago and Northwestern Railroad. It has a good harbor, a large shipping business, extensive fisheries, and manufactures of brass goods, automobiles, leather, beds and springs, underwear and stockings. Pop. 26,370.

Kenrick (ken'rik), FRANCIS PATRICK, Catholic archbishop, was born in Dublin, Ireland, in 1797. In 1830 he was nominated coadjutor Bishop of Philadelphia. In 1851 he was translated to the see of Baltimore. He was a profound Hebrew scholar, and was considered the ablest theologian the Roman Catholic Church has produced in the United States. His theological works have been largely used. He died in 1863.—His brother, PETER RICHARD, born in 1806; died in 1896, became bishop of St. Louis in 1843 and archbishop in 1847.

Kensington (ken'sing-tun), a western and fashionable suburb of London. It contains the famous Kensington Palace, around which are the beautiful Kensington Gardens. Also the South Kensington Museum, Natural History Museum, etc. Pop. 176,623. —Also the name of a great carpet manufacturing section of Philadelphia, Pennsylvania, in the northeastern part of the city, of note as the site of Penn Treaty Park, the place where William Penn made a treaty with the Indians in 1682.

Kensington Museum, or SOUTH KENSINGTON MUSEUM, a museum in London, originated by Prince Albert in 1852. It is a red brick and terra-cotta structure in the Renaissance style, and was first opened in 1857. It contains probably the most beautiful and generally interesting collection in Europe, comprising objects of industrial art, both ancient and modern, products and materials used in manufactures, building, engineering, etc.; reproductions of ancient sculpture and architecture, modern paintings in oil and water-color, and sculpture by British artists, besides occasional loan collections. South Kensington Museum is under the direction of the Council of Education and receives large government grants. It forms the center of industrial art education in Great Britain, and a school of science and cookery is also connected with it.

Kent, a maritime county of England, forming the southeast extremity of the kingdom; area, 1170 square miles, nearly all arable, meadow, or pasture. Off the east coast lie the well-known Goodwin Sands, between which and the mainland is the roadstead called the Downs. The county is traversed from east to west by the North Downs, a range of chalk hills rising to 650 feet, and terminating in lofty chalk cliffs at Dover, Folkestone, and Hythe. The district south of this range, or between it and

Sussex, is called the Weald, and was anciently an immense forest. Its southeastern portion comprises Romney Marsh. The chief river is the Medway, which enters the estuary of the Thames. The soil is generally fertile, and agriculture is in a most advanced state. Kent is the principal hop county, but large crops of wheat, barley, beans and peas are also raised, and the cultivation of fruit, flowers, and vegetables is carried on extensively, London offering a near and ready market for this kind of produce. Kent has justly been termed the 'Garden of England.' Its chief manufactures are paper, chemicals, and gunpowder, and there are also some calico-printing and bleaching works. The county town is Maidstone. Pop. (1911) 1,019,870.

Kent, JAMES, an eminent American jurist, born in 1763; died in 1847. He was educated at Yale College, studied law, and was admitted an attorney in 1785. After practicing at Poughkeepsie he settled in New York, and became professor of law at Columbia College (1794-98). He was successively appointed master in chancery, recorder, judge of the Supreme Court, chief justice (1804-14), and chancellor of New York (1814-23). He a second time accepted the law professorship at Columbia College in 1824-25. His *Commentaries on American Law* (1826-30) at once became a standard work, while his decisions were quoted in the courts as of the highest authority.

Kent, WILLIAM, an English landscape gardener and artist, born in 1685; died in 1748. He was apprenticed to a coach-painter, but repaired to London, tried his hand at portrait and historical painting, and with the assistance of some of his patrons was enabled to study for some years in Italy. On his return he carried out some architectural work which was much admired, but he is best known as the founder of modern landscape gardening.

Kenton (ken'tun), a city, capital of Hardin County, Ohio, 56 miles N. of Springfield. It has the largest iron fence factory in the United States; also hardware works, saw and planing mills, bee keepers' supplies factory, etc. Pop. 7185.

Kent's Hole, a cavern near Torquay, Devonshire, England, in which have been found many bones of extinct species of animals.

Kentucky (ken-tuk'i), a South-Central State of the American Union, in the Mississippi Valley, bounded N. by Ohio and Indiana, N. W. by Illinois, W. by Missouri, S. by Tennessee, and E. by Virginia and West Virginia; area, 40,598 square miles. The surface of the State is gently undulating, excepting the southeast, which is somewhat mountainous. Few States are better provided with water communication. The Ohio forms the boundary on the north, and receives from within the State numerous tributaries, of which the most important are the Cumberland, Kentucky and Tennessee; the Mississippi, after receiving the Ohio, forms the boundary on the west. The climate is salubrious, the soil fertile, the principal crops being wheat, Indian corn and tobacco; but oats, barley, hemp and fruit are extensively raised, and stock breeding is another important feature, the Kentucky cattle and horses especially being celebrated. Not less important is the breeding of mules, of which many thousands are yearly exported, and of swine and sheep. The wool product is large and of fine quality. The 'blue-grass' region furnishes admirable pasture. Coal and iron ores of various descriptions abound in many parts of the State, Kentucky having iron ores of great richness and extensive coal beds, though this mineral wealth has not been largely exploited. Limestone occupies a large area, and in this formation is the famous Mammoth Cave, one of the world's wonders. The chief manufacturing industries comprise tobacco and cigars, whiskey and malt liquors, cotton and woolen factories, ironworks and tanneries. The central position of the State, and the abundant water and railway communication, have secured it a rapid commercial development. Kentucky originally formed part of Virginia, but was separated from it in 1790, and admitted into the Union in 1792. The seat of government is Frankfort, a comparatively small place; the oldest town is Lexington; but the largest and by far the most important city is Louisville. Pop. of State 2,289,905.

Kentucky River, a river of the United States, rises in the Cumberland Mountains, traverses the State of Kentucky, and after a course of 260 miles flows into the Ohio at Carrollton. By a series of improvements the lower portion has been rendered continuously navigable for steamers.

Kenyon College (ke[illegible]n), an educational institution founded at Gambier, Ohio, in 1824, by Philander Chase, a bishop of the Protestant Episcopal Church. It has an endowment of about $600,000.

Keokuk (kē'ō-kuk), a city and one of the capitals of Lee Coun-

ty, Iowa, at the junction of the Des Moines and Mississippi rivers. The Mississipi power dam located here is 1¼ miles long, raises the water 40 feet and sets it back 67 miles. The Mississippi River Power Company has its plant at the Keokuk end of the dam, and will furnish 300,000 electrical horse-power. Keokuk is an important business center; has a large trade in butter, eggs and poultry; extensive lumber yards and mills, and manufactures shoes, starch, canned goods, cement machines, cereals, hardware specialties, pickles, buttons and barrels. Pop. 16,000.

Keokuk, a North American Indian, (1780-1848), chief of the Sacs and Foxes, born on Rock River, Ill. He was by birth a Sac, and by his bravery and ability became chief of the united nations of the Sacs and Foxes. Black Hawk (q. v.) whom he succeeded as chief, joined the British in the war of 1812 and repudiated the treaty giving up to the United States certain lands east of the Mississippi. In 1823 Keokuk, who had supplanted Black Hawk as chief of the Sacs and Foxes, moved with his tribe across the Mississippi and a new treaty was signed in 1832, Keokuk being officially recognized as chief. He visited New York, Boston and other cities. In 1848, in Kansas, he was poisoned by one of the Black Hawks, which tribe had a feud with his own band.

Kepler (kep'ler), JOHANN, a great German mathematician and astronomer, born in 1571, near Weil (Würtemberg); died at Ratisbon in 1630. He studied at the University of Tübingen, and in 1593 he was appointed a teacher of mathematics at Gratz (Styria). Here he devoted himself with much ardor to the study of astronomy; but in 1599 the religious persecutions commenced in Styria, and Kepler, being a Protestant, gladly accepted Tycho Brahe's invitation to Prague, to assist in the preparation of the new astronomical tables, called the Rodolphine Tables. Tycho died in 1601, and Kepler continued the work alone, being appointed imperial mathematician and astronomer. After twenty-five years' incessant labor the tables were published in 1627 at Ulm. Kepler had become the happy possessor of all Tycho's papers, and the mass of observations made by that astronomer during twenty years, with a precision till then unsurpassed, enabled Kepler to establish his three laws (see next article). Kepler enjoyed the patronage of the Emperors Rodolph and Ferdinand, the Dukes of Würtemberg and Wallenstein, but his life was a continued struggle, and his domestic relations were equally unfortunate. The latter part of his life was chiefly passed at Linz as professor of mathematics. He wrote much, but the work that has rendered him immortal is his *Astronomia Nova, seu Physica Cœlestis tradita Commentariis de Motibus Stellæ Martis* ('New Astronomy, or Celestial Physics delivered in Commentaries on the Motions of Mars'; Prague, 1609, folio).

Kepler's Laws, in astronomy, three laws discovered by Kepler (see preceding article) on which were founded Newton's discoveries, as well as the whole modern theory of the planets:—1. Every planet describes an ellipse, the sun occupying its focus. 2. The radius vector (line joining the center of the sun with the center of the planet) of each planet sweeps over equal areas in equal times. 3. The squares of the periodic times (the periods of complete revolution round the sun) of two planets are proportional to the cubes of their mean distances from the sun. These laws enabled Newton to determine the law of the attraction of gravitation.

Keppel (kep'el), AUGUSTUS, a British admiral, born in 1725; died in 1786; was the second son of the Earl of Albemarle. He entered the sea service at an early age, and accompanied Admiral Anson round the world (1740-45).

Kerensky, ALEXANDER, a Russian lawyer and statesman, born at Simbirsk, near Tashind, Siberia, 1880. He was minister of justice in the cabinet of Prince Lvoff, formed after the Czar's abdication in 1917. He became Minister of War and succeeded Lvoff as Prime Minister. He proclaimed Russia a republic and set about the reorganization of the army. He was a Socialist, but of the moderate type. His policies were not radical enough to suit the Maximalists (see *Bolsheviki*), who took forcible control of the government, and Kerensky was compelled to flee from the capital in disguise.

Keratin (ker'a-tin; Gr. *keras*, a horn), a substance obtained from claws, feathers, hair, horn, nails, wool, and other epidermal appendages.

Kerbela (ker'be-la), or MESHED-HASSEIN, a town of Asiatic Turkey, vilayet of Bagdad, about 60 miles s. s. w. from Bagdad and 20 miles w. of the Euphrates. It is a very ancient city and holy to Mohammedans, especially to the Shiites, who make pilgrimages there in thousands, [illegible] a brisk trade. Some of these pilgrims carry the bones of relatives for burial there, and the fees exacted form an important revenue. Pop. est. at 65,000.

Kerguelen's Land, KERGUELEN ISLAND (kerg'len), an uninhabited mountainous island lying in the Indian Ocean about midway between the Cape of Good Hope and Australia, discovered by the French navigator Kerguelen in 1772. Its outline is very irregular, the island being much cut up by fjords and inlets; greatest length about 85 miles, greatest breadth 79; highest summit over 6000 feet. The scenery is picturesque and often magnificent; glaciers and snow fields occupy a considerable area. The climate is wet and stormy, the temperature never very high nor very low. The fauna and flora are somewhat limited. The former includes the fur seal, sea elephant and numerous penguins, petrels, the albatross, etc.; the latter is most abundant in mosses and lichens, but the most peculiar form is the Kerguelen cabbage (*Pringlea antiscorbutica*), a perennial cruciferous plant. Trees are wanting. The island is only occasionally visited by whalers and sealers. Cook visited it in 1777, Ross in 1840, the *Challenger* expedition in 1874, and in 1874-75 parties from Britain, Germany, and the United States were stationed here to observe the transit of Venus.

Kerkuk (ker-kōk'), officially called SHAHR-ZUL, a town of Asiatic Turkey, vilayet of Bagdad, about 140 miles N. of Bagdad, and the residence of the pasha. There are a number of petroleum and naphtha springs in its neighborhood, and it has considerable trade. Pop. chiefly Kurds and Jews, about 15,000.

Kermadec Islands (ker-mad'ek), since 1840 a British dependency under the jurisdiction of a New Zealand magistrate, but formally annexed in August, 1887. They consist of four principal islands, surrounded by a number of small islets and rocks. The most northerly and the largest is Sunday Island, 674 miles northeast of Auckland, area 7200 acres. They are of volcanic origin, and earthquakes and other disturbances have taken place in recent years. The surface is mostly rugged, but tracts occur not too steep for cultivation, with a rich soil. The highest peak is 1723 feet above sea-level. Vegetation is luxurious, the flora being similar to that of Northern New Zealand; fish and birds are plentiful. There is no good harbor. The first settlers were two Englishmen married to Samoan girls, who landed on Sunday Island in 1837, but left in 1848. Others have been there for shorter periods, and a family from Samoa took possession in 1878.

Kermân (ker-mān'), KIRMÂN, or SIRGAN, a town in Persia, capital of a province of the same name. It has numerous mosques, baths, caravanserais, and a well-furnished bazaar. Its manufactures consist of silks, shawls, woolens, etc. Pop. estimated at 45,000 to 70,000. The province of Kerman, in the southeast of Persia, has an area of 50,000 square miles and a pop. estimated at 600,000. In the east and south the soil is very fertile, the date, the grape, and the silkworm being largely cultivated.

Kermanshah (ker-mān-shā'), or KIRMANSHAHÂN', a town in Persia, province of Ardilân. The manufactures consist chiefly of carpets or rugs; the trade, chiefly transit by the routes from Bagdad, Shuster and Ispahan, is very considerable. Pop. about 30,000.

Kermes (ker'mēz), the dried female insects of the species *Coccus ilicis*, found in many parts of Asia and South Europe on the leaves of a species of oak shrub (*Quercus coccifera*), and supplying a durable red and scarlet dye. They have been utilized for dyeing purposes in the East from very ancient times, and in Germany and Spain since the middle ages; but since the introduction of cochineal their use has been confined to the Eastern countries and Spain, where the collection of these insects still gives employment to a large number of people.

Kermes Mineral, amorphous antimony trisulphide, a brown-red powder used in the preparation of artists' colors.

Kerosene (ker'o-sēn), an illuminating oil obtained by refining crude petroleum. The bulk of kerosene is supplied by the United States and Russia. America controlled the kerosene market for many years, but Baku, on the Caspian, has now become a formidable rival, not only driving American kerosene out of the Russian market, but also supplanting it in some other countries. See *Petroleum*.

Kerowlee. See *Karauli*.

Kerry (ker'ri), a maritime county of Ireland, on the southwest coast, in the province of Munster; area, 1852 square miles, of which about one-tenth is under tillage. Great part of it is mountainous. Carran Tual, the highest peak in Ireland, attaining a height of 3414 feet above sea-level; other parts are very fertile, producing excellent pasture and good crops of oats, barley and potatoes, but agriculture is much neglected.

The climate is mild and moist. The coast is much indented by bays and inlets (Dingle Bay, Kenmare River, etc.); the interior presents much fine scenery, including the picturesque lakes of Killarney. Iron ore, copper and lead exist, and a superior kind of slate and flagstone is obtained in great quantities in the island of Valentia. The chief exports are oats and dairy produce. Principal towns, Tralee and Killarney. Pop. 165,726. It has fallen off greatly during the last half century.

Kersey (ker'zi), a strong coarse woolen cloth, generally ribbed, and formerly largely manufactured in Germany, France and the North of England, for making riding and hunting suits, but now chiefly used in liveries for the parts exposed to extra strain and wear.

Kerseymere (ker'zi-mēr), or CASSIMERE (from the town *Cashmere*), the name given to a light fabric woven from the finest wools, principally in the west of England, and at Elbeuf, France. It is chiefly used for ladies' jackets and gentlemen's gaiters.

Kertch, or KERCH (ancient *Panticapæum*), a fortified seaport town of Russia, in the Crimean peninsula, on the Strait of Yenikale, connecting the Sea of Azof with the Black Sea. The modern town is of quite recent existence; it is well built, advantageously situated for commerce, and has a rapidly growing trade. Pop. 29,000.

Kesho. See *Hanoi.*

Kestrel (kes'trel), or WINDHOVER (*Falco tinnunculus*), a species of the falcon tribe, widely distributed in Europe. It is remarkable for its habit of remaining suspended in the air by means of rapid wing motion, being at this time on the lookout for mice, which are its chief food. At times it will also eat small birds, and insects frequently. It varies from 12 to 15 inches in length; it nests in trees, also in old towers and buildings, and often utilizes an old crow's nest. In winter it migrates to North Africa and India.

Kestrel (*Falco tinnunculus*).

Keswick (kes'ik), a town of England, in the county of Cumberland, 22 miles southwest of Carlisle, finely situated on the Greta, near Lake Derwentwater. Coarse woolens are manufactured, but the inhabitant depend chiefly upon trade with the visitors to the romantic scenery in the neighborhood. Pop. (1911) 4403.

Ketch (kech), a two-masted vessel of the galliot type, usually from 100 to 250 tons burden. Ketches were formerly often used as yachts, also as bomb-vessels.

Ketcho. See *Hanoi.*

Ketchup (kech'up), or CATSUP, said to be derived from the Japanese *kitjap*, a pungent sauce first introduced from the East, and employed as a seasoning for gravies, meat and fish. It was formerly prepared from mushrooms only, but numerous other products are now used for the same purpose. The best ketchup is obtained from mushrooms, walnuts and tomatoes; instructions for its preparation may be found in almost every cookery book.

Kettering (ket'er-ing), a market town of England, in the county of Northampton. Boot and shoe making is the staple trade, besides which tanning, currying, and the manufacture of agricultural implements are carried on. Kettering is the center of the ironstone district of the county, and daily sends thousands of tons of ore into Wales, Derbyshire and Yorkshire, besides having several smelting furnaces in the neighborhood. Pop. (1911) 29,976.

Kettle-drum. See *Drum.*

Kew (kū), a small village in the county of Surrey, England, situated on the right bank of the Thames, 1½ miles from Richmond. The royal botanic gardens and the connected pleasure-grounds (belonging to the nation), the former covering about 75 acres, the latter 250, are the chief attraction of visitors to Kew. They contain the finest collection of plants in the world, and are open to the public on Sundays as well as week days. Connected with the gardens is a museum and a herbarium, including some fine collections of preserved plants.

Kewanee (kē-wä'nē), a city of Henry County, Illinois, 132 miles S. W. of Chicago. Bituminous coal is mined here, and there are manufactures of steam heaters, boilers, windmills, pumps, etc. Pop. 16,000.

Kewatin (kē-wat'in), or KEEWATIN, a large Canadian territory under the jurisdiction of Manitoba, and stretching from Manitoba and Ontario to Hudson Bay, and northward to the Arctic Seas. The country is not much opened as yet; it is mostly densely wooded, and in many parts swampy, but rich in minerals and game. Area about 470,000 square miles. Pop. about 9000.

Kew-Kiang, or KIU-KIANG (kō-ō'-kē-äng'), a town and seaport of China, province Kiangsi, on the south bank of the Yang-tse-kiang. Its situation is not favorable for an extensive commercial port, but derives importance from its connection with the green-tea districts. Pop. over 60,000.

Key (kē), ELLEN, prominent Swedish educator and author, born in 1850. She is known to the American public chiefly through her *Education of the Child*, in which she proclaimed anew the dignity of woman's work and the inadequacy of present methods of education. Other books of hers published in English translations are *Love and Marriage* and *The Woman Movement*.

Key, FRANCIS SCOTT, poet, was born in Maryland Aug. 9, 1780; died in 1843. He studied law and practised at Frederick, Maryland, and in the District of Columbia for several terms. Detained against his will, he was on a British man-of-war when the attack was made on Fort McHenry, September 13, 1814. From this came the inspiration to the favorite American national song, *The Star Spangled Banner*.

Key, or KEYNOTE, in music, the principal or fundamental note or tone, to which the whole of a movement has a certain relation. See *Music*.

Keys, the name given to islets and sunken rocks, from Spanish *cayo* (an islet rock). It is especially applied to the group of small islands south of Florida.

Keystone, in architecture, the central stone of an arch or vault, which locks or keys the whole together, whence the name. See *Arch*.

Key West, a city, county seat of Monroe Co., Florida, on Key West Island, or Bone Reef, a small, low-lying coral island south of Florida, 60 miles s. w. of Cape Sable, and commanding the entrance to the Florida Passage and the Gulf of Mexico. The city is a port of entry and military station of the United States and has a safe and accessible harbor defended by a fort. It has extensive docks, repair yards, marine railway, etc., and its mild climate has made it a popular health and winter resort. Cigars are very largely manufactured, and there are important industries in sponges, coral and turtle shell, and in deep-sea fishing. A railroad over the keys and shallows to this island was opened in 1912. Pop. 23,000.

Khairpur (khir-pōr'). See *Khyerpur*.

Khaki (ka'ki), the name given to the yellowish, earth-colored uniform now worn by United States soldiers, chosen for its inconspicuousness. Its name comes from a dye used to color the uniform of Indian soldiers and sepoys.

Khamgaon (khäm-gä'on), a town of India, in Akola district, Berar, with a trade in cotton, grain and opium. Pop. 18,341.

Khan (kan), a title given by Tartars, Persians and other Eastern nations to princes, chieftains, commanders and governors, but now generally reserved for governors of cities and provinces, these provinces being called *khanates*. Kahn is also another term for caravansary, of which there are two kinds: one for pilgrims and travelers, with gratuitous entry; another, more commodious and with locked apartments, for traders, subject to a nominal charge.

Khandesh (k[illegible]n-dāsh'), a district of B[illegible]h India, in Bombay Presidency, formi[illegible] the most northerly portion of the Deccan tableland, and intersected by the Tapti River; area, 9944 square miles; pop. 1,460,000.

Khandwa (k[illegible]nd'wä), a flourishing town of India, Central Provinces. P[illegible] 19,401.

Khanpur (khän'pōr), a commercial town of India, in the Punjab, on a navigable canal. Pop. 7189.

Khargeh (kär'jä), EL, a town in Upper Egypt, about 100 miles s. w. of Girgeh, the capital of the oasis of the same name, and an important station for caravans on the way to Darfur and Central Africa. It contains numerous ruins, and an acropolis of great interest. Pop. 5000 to 6000.

Kharkoff (kär-kof'), or CHARKOV, a government of the south of Russia; area, 21,035 square miles; pop. 2,507,277. The country is open, the climate mild, the soil usually fertile, and agriculture is the chief pursuit of its inhabitants. The capital, Kharkoff, situated at the confluence of the Kharkoff and Lopan, has a considerable trade in cattle, grain, etc., and manufactures beet-sugar, soap, candles and leather. A bed of coal of immense extent in its vicinity is doing much to foster industries. The University of Kharkoff is an important educational center. Pop. (1911) 240,000.

Kharput (kär'put), a town of Turkish Armenia, 60 miles N. of Diarbekir, on the route to Siwas, picturesquely situated on a rocky eminence in a plain watered by the Euphrates. It is noted for its castle and other ruins. Pop. 20 000 to 30,000.

Khartoum (kär-töm'), a town in the Eastern Soudan, on the left bank of the Blue Nile, near its junction with the White Nile. It has sprung up since 1830, and is the capital of and largest town in the Egyptian Soudan, and the emporium of a large trade, ivory, gums, ostrich feathers, senna, etc., being exchanged for European goods, and slaves also formerly dealt in. It was the scene of Gordon's heroic defense against the insurgent Soudanese, and of his death in January, 1885. (See *Gordon.*) It was reduced to ruins by the Dervishes, who built the town of Omdurman on the other side of the Nile, but was retaken and restored in 1898. Pop. 69,349.

Khasi and Jaintia Hills, an administrative district of Assam; area, 6157 square miles. In these hills occurs the heaviest rainfall in the world. The Khasis are a peculiar race, speaking a monosyllabic agglutinative language that has no analogy elsewhere in India.

Khat. See *Catha.*

Khatmandu (khät-män-dö'), capital of the Kingdom of Nepál, in Northern India, on the left bank of the Baghmati, on an elevated plateau, 150 miles north by west of Patna, with which it is connected by an important trade route. It is well built, and has many picturesque temples and pagodas. Pop. about 50,000.

Khayyam, Omar. See *Omar.*

Khedive (ke-dēv'), a word signifying *lord*, the title of the rulers of Egypt, originally granted by a firman from the sultan in 1866 to Ismail Pasha, then *Valí* or viceroy of Egypt.

Kherson (ker'son), or Cherson, a maritime government of Southern Russia; area, 27,523 square miles; pop. 3,257,600. Almost the whole surface is one uninterrupted steppe, covered with long grass, and in many parts strongly impregnated with saltpeter. It is watered by the Dnieper, the Dniester and the Bug. Agriculture is in a defective state, but considerable attention is paid to the cultivation of vegetables and fruit. The bulk of the trade is carried on by its port of Odessa.—Kherson, the capital, an extensive town on the right bank of the Dnieper, about 15 miles above its estuary, was formerly a very important town; but its trade is rapidly declining, being absorbed by Odessa, and Nicolaieff, with its growing dockyards, 40 miles distant. Tallow melting, ropemaking, and wool washing are still extensively carried on. Kherson is the resting place of Howard, the philanthropist, and has a monument in its vicinity erected to his memory by the late Emperor Alexander. Pop. (1912) 91,858.

Khiva (kē'vä), or Chiva, a semi-independent khanate of Central Asia, forming part of Turkestan. It formerly occupied a large extent of surface on both sides of the Amu-Darya or Oxus, but since the cession to Russia, in 1873, of its territory on the east of the Amu, it is now confined to the west side of this river. It is of a triangular shape, each of its three sides—of which the Amu forms one—being about 300 miles in length. One of its angles rests on the Sea of Aral. A great part of the surface consists of deserts, thinly inhabited or uninhabitable; but along the Amu the land is rich alluvial loam of the greatest natural fertility. Assisted by irrigation it yields luxuriant crops of grain, cotton, madder, fruit, including the vine and vegetables. The winter is neither severe nor prolonged, but the summer is very hot. Manufactures are lacking in importance. Trade is now being rapidly developed by Russian influence, especially by their Transcaspian Railway from the Caspian to Samarkand. The total population is about 800,000. The capital, Khiva, lies on an alluvial flat at the junction of two canals, 50 miles west of the left bank of the Amu. It forms an irregular circuit of about 4 miles, and is enclosed by a dry ditch and an earthern wall about 20 feet in height and thickness, and entered by twelve gates, the masonry of which is of brick. Among the principal buildings are two palaces of the khan, a number of mosques, and the castles of the principal state officers. Pop. about 10,000.

Khoi (ho'i), a town of Persia, province of Azerbijan, 65 miles N. W. of Tabriz. Pop. about 35,000.

Khojend, or Khojent (kō-jent'), a town in Russian Turkestan, but formerly in the Khanate of Khokand, on the Bokhara frontier. It stands on elevated ground, and has been fortified by the Russians. It was formerly of much commercial importance, but trade has declined in recent years; a considerable trade in Russian goods is still carried on. Pop. (1912) 39,977.

Khokand, or Kokand (kō-kand'), formerly an independent khanate of Central Asia, but since 1876

forming the province of FERGHÂNA in Russian Turkestan. Its present area is 29,650 square miles, generally mountainous. It is traversed from east to west by the Sir-Daria, which receives all its drainage. The summer is excessively hot, the winter cold, but dry. Cattle raising is the chief source of wealth, but heavy crops of grain and fruit are also produced. The manufactures consist chiefly of silk and cotton goods. The capital, KHOKAND, is situated on both sides of the Sir. It manufactures silk and cotton fabrics, and is the center of a large trade, ranking next in importance and size to Tashkent and Bokhara. Pop. 113,764.

Khorasan (*ko*-rä-sän'), a province of Persia, bordering on Afghanistan; area, 140,000 square miles; pop. 860,000. Much of the surface consists of deserts, but there are also fertile districts producing crops of cotton, hemp, aromatic and medicinal herbs. The most valuable mineral is the turquoise from the ancient mines of Nishapur. The principal manufactures are silk and woolen stuffs, carpets, muskets and sword-blades. About two-thirds of the inhabitants are Persians proper; the remainder are chiefly Turcomans and Kurds.

Khosru I. See *Chosroes I.*

Khotin (*kō*'tin), or CHOCZIM, a fortified town of Russia, province Bessarabia, on the Dniester, near the Austrian frontier. It figured much in the wars of the Poles, Austrians, Turks and Russians. Pop. 18,126.

Khurja (khör'*ja*), a town of India, N. W. Provinces, with a fine Jain temple and other good buildings, and a flourishing trade, especially in cotton. Pop. 29,277.

Khusháb (kösh-äb'), a town of India, in the Punjab, on the river Jhelum. Pop. 10,000.

Khuzistan (*ku*-zis-tän'), or ARABISTAN, a province of Persia, bounded on the south by the Persian Gulf, and on the west by Asiatic Turkey; area, 38,600 square miles, watered by the Karun and other streams; pop. estimated at half a million. In the south there are some extremely fertile plains, producing crops of rice, cotton, tobacco, indigo, silk and grain. The interior and north are mountainous, and flocks and herds maintain their inhabitants. Trade is chiefly carried on with Bagdad and Bussorah. Dizful and Shuster are the chief towns.

Khyber (khī'bêr), or KHAIBAR, a famous pass in the northeast corner of Afghanistan, the chief gate to that country from Peshawur, by means of which India has been invaded from time to time, and the scene of severe conflicts in the recent Afghan war. Its position renders it of the greatest importance to British India, and it is now fortified and under the jurisdiction of the lieut.-governor of the Punjab. It is 33 miles long, and enclosed by cliffs from 600 to 1000 feet high.

Khyerpur, or KHYRPUR (khīr-pör'), a town of Sindh, 15 miles east of the Indus and 150 miles N. of Hyderabad. Pop. (1901) 14,014.

Khyrabad (khī-rä-bäd'), a town of India, in Oudh, with numerous mosques and Hindu temples, and large fairs. Pop. 14,217.

Kiakhta (ki-ak'tä), a town of Siberia, in the province of Transbaikalia. It formerly monopolized the overland trade between Russia and China, and the importation of tea still forms its chief commerce. Pop. (including Ust-Kiakhta and Troitskosavsk) about 20,000.

Kiang-si (kē-äng'sē'), one of the central provinces of China; area, 72,176 sq. miles; pop. 22,000,000. It is profusely watered by numerous streams, and the greatest portion of the soil is highly productive, especially in rice and sugar. The province manufactures paper, cotton and silk goods, and is celebrated for its porcelain. Its capital is Nan-chang-fu.

Kiang-su (kē-äng'sö'), the richest of the central provinces of China; area, 45,000 square miles; pop. about 21,000,000. Its products of nature and art excel those of almost any other province, while the inhabitants are of the most intelligent in the whole empire. The cities contain the finest specimens of Chinese architecture and decoration; the rice, wheat, cotton, silk and green tea produced are of the best, and the satins, cotton cloths, ink and paper manufactured are unsurpassed. The capital is Nanking; chief port, Shang-hai.

Kiao-chau (ky-ä'ō-chou), a German protectorate in Shantung, China. In January, 1898, the bay and surrounding coast (193 square miles) were leased for ninety-nine years to Germany, as compensation for the murder of two missionaries. It was surrendered to Japan Nov. 7, 1914, by the German garrison after a defense of four months. By the peace of 1919 (see *Treaty*) the German rights in Kiao-chau were transferred to Japan. Pop. 70,000. Kiao-chau Bay is 15 m. long and 15 m. wide.

Kibitka (ki-bit'ka), a tent of the nomad tribes of the Kirghis Tartars. The frame consists of collapsible of folding lattice work, set up in a

wheel-shaped roof-frame, consisting also of twelve stakes, united at one extremity but free at the other, so that the stakes radiate like spokes. The whole is covered with thick cloth made of sheep's wool, with the exception of an aperture in the center for the escape of smoke. The door is formed by the removal of a stake.

Kidd, BENJAMIN, an English sociologist, born in 1858. He won distinction by his first work on *Social Evolution* (1894), advancing the theory that society should be interpreted in terms of biology. It was followed by *The Control of the Tropics* (1898), *The Principles of Western Civilization* (1902), and *Individualism and After* (1908).

Kidd, WILLIAM, a celebrated pirate, known as Captain Kidd, born about the middle of the seventeenth century, and originally a shipmaster of New York. In 1696 he was appointed captain of the ship *Adventure Galley* of thirty guns by William III, for the suppression of piracy. In America he collected some 150 recruits, sailed for the East Indies; took to pirating in the Indian Ocean, and returned with his booty to New York in 1698. He was arrested and arraigned in England for piracy; but the charge could not be brought home to him; he was then tried for the murder of one of his crew, sentenced and hanged. The myth that he buried immense treasure on the shores of Long Island Sound, or the banks of the Hudson River, gave rise to one of Edgar Allan Poe's tales.

Kidderminster (kid'er-min-stèr), a parliamentary and municipal borough and market town of England, County Worcester, on the banks of the Stour. Kidderminster is famed for the manufacture of carpets, rugs, and tapestry. Various other woolen fabrics are also made; and there are worsted mills and dye-works, iron-foundries, tin-plate works, flour mills, tanneries and breweries. Pop. (1911) 24,333.

Kidnapping (kid'nap-ing), the act of getting forcible and illegal possession of any person, an offense of varied degree, but always punishable by fine or imprisonment. In its more modern and limited sense, it is applied to the obtaining of slaves or native labor by force, as practised by the Arabs in Africa. This barbarous traffic existed in very recent years in the South Seas, carried on by Europeans, but now happily suppressed by the appointment of government labor agents. In Great Britain this term was formerly also applied to the illegitimate recruiting for the army and navy. There have been various notable instances of the kidnapping of children, for the purpose of enforced reward, in the United States.

Kidney Beans. See *French Beans.*

Kidneys (kid'niz), two of the abdominal viscera, in the form of two glands, the function of which is to secrete the urine from the blood. They are situated one on each side of the vertebral column at the back part of the abdominal cavity on a level with the last dorsal and two upper lumbar vertebræ. The right kidney lies at a slightly lower level than the left. They are of the well-known 'kidney-bean' shape. The concave side of each kidney is turned inwards and towards the spine. The depression on the inner side is termed the *hilum*, and from this notch the excretory duct or *ureter* proceeds, whilst the blood-vessels of the kidney enter and leave the gland at this point. The weight of each kidney of a male is about 5 oz., those of the female weigh each somewhat less. Each gland is covered by a thin sheath of fibrous tissue, which has no extension into the substance of the organ. The internal substance is divided into an outer deeper-colored *cortical* portion or *cortex*, and an inner lighter-colored or *medullary* portion. Both portions consist of tubes (*tubuli uriniferi*), which run a very tortuous course in the cortex, but continue as straight tubes in the medulla. The latter is formed into a series of conical fleshy masses, about twelve in number, called *pyramids of Malpighi*. These project into a cavity formed at the hilum by the expansion of the excretory duct, and called the *pelvis* of the kidney. Prolongations of the expanded ureter, called the *calyces*, invest the apices of the pyramids and dip in between them like funnel-shaped tubes. Now in the cortex the end of a tubule is dilated into a sac or capsule; into this a small branch of the renal artery enters, and then breaks up into a tuft of capillary blood-vessels. This tuft is called the *glomerulus*, and it and its capsules form a *Malpighian corpuscle*, about $\frac{1}{100}$th of an inch in diameter. So that a tubule,

SECTION OF HUMAN KIDNEY.

a, Suprarenal capsule, resting above the kidney. *b*, Cortex or cortical portion of kidney. *c c*, Medullary portion, consisting of cones. *d d*, Apices of the pyramids, projecting into their corresponding calyces *ee*. *f*, Pelvis. *g*, Ureter.

beginning at its dilated end, runs a tortuous course in the cortex, reaching the medulla becomes straight, and finally opens into the pelvis on the apex of a pyramid. The blood-vessels of the kidney consist of the *renal artery*, derived from the aorta, and the *renal vein*. The branches of the artery enter the gland at the hilum, and pass into the substance of the gland between the papillæ. Finally they reach the cortical portion, and therein subdivide into the minute vessels, which form the *glomeruli* of the Malpighian bodies. The renal veins leave the kidney also at the hilum, and pour their contents into the great main vein of the lower parts of the body (*vena cava inferior*). The nervous supply of the kidney is derived from the renal plexus, and from the solar plexus or large sympathetic mass of the abdomen. The separation from the blood of the constituents of the *urine* is accomplished in the glomeruli, and by the uriniferous tubules, the former straining off the watery parts of the blood, whilst the latter remove the more solid matters. Gradually, the secreted urine passes through the tubules, into the pelvis of the kidney, thence into the ureters, which in turn open into the bladder behind its orifice or neck. The urine is constantly entering the bladder drop by drop.

Inflammation of the kidneys is known as *nephritis*. Occasionally concretions of mineral substances accumulate in the kidney, and cause, in their passage from the gland and through the ureter, most excruciating pain. The most dangerous disease of the kidneys is that known as Bright's disease (which see).

Kidney Vetch, *Anthyllis*, a genus of plants, nat. order *Leguminosæ*. There are many species both shrubby and herbaceous. The variety found in Great Britain, chiefly on very dry soils, is the *Anthyllis vulneraria*, commonly called Lady's Fingers, with pinnate, unequal leaves, and heads of flowers generally yellow, sometimes graduating towards scarlet.

Kidonia. See *Aivali*.

Kieft (kēft), WILLIAM (?-1647), Dutch colonial administrator; director-general of New Netherland (q. v.), 1637-47 (see *Dutch West Indies*). He was incompetent, tyrannical, and brutal in his treatment of the Indians. Peter Stuyvesant (q. v.) succeeded him.

Kiel (kēl), a town of Prussia, in Schleswig-Holstein, beautifully situated on a deep bay of the Baltic, 54 miles north by east from Hamburg. The most notable buildings are the university and the royal palace (containing the university library). As a fortified naval port of Germany, with an imperial dockyard, and as the station of the greater part of the imperial fleet, Kiel is rapidly

rising in importance. Besides shipbuilding, it has iron-foundries, engineering works, oil-mills, tan yards, tobacco-works, etc. A ship canal connects it with the Elbe. Pop. (1910) 211,044.

Kiel Canal, connecting the Baltic and North Seas. The original Baltic and North Sea Canal was completed in 1895. It was 61.3 miles long and 190 feet wide. Improvements completed in 1914 increased the width to 140 feet and the depth to 36 feet, enabling the passage of the largest warships. By the peace of 1919 (see *Treaty*), the canal was opened to free passage of war and merchant ships of all nations.

Kielce (ki-el'tse), a government and town in Russian Poland; area of the former, 3897 sq. miles, pop. 910,900. It is watered by tributaries of the Vistula, and partly covered by offsets of the Carpathians. There are some iron and sugar factories, rapidly growing in importance, especially since the coal-fields of the province have been opened.—The capital, KIELCE, is an ancient town about 50 miles northeast of Cracow. Pop. 23,189.

Kieserite (kē'zer-it), $MgSO_4H_2O$, a sulphate of magnesia obtained at Stassfurt and elsewhere, and

employed as a source of Epsom salt and in the manufacture of manures. Mixed with quicklime and water it hardens into a mass which, after heating, pulverizing, and again mixing with water, becomes of a marble-like consistency, and may be made into ornamental articles, etc.

Kiev (ki-ev') or KIEFF (ki-ef'), a government of s. w. Russia; area, 19,691 sq. miles; pop. 4,206,100. The surface is in general flat, intersected occasionally by hills of moderate elevation along the course of the Dnieper and other streams. The Dnieper is the only stream navigable to any extent. The climate is mild, the summer very hot and dry. The manufacture of beet-sugar has made rapid strides in recent years, and the province is now the largest producer of that article in the empire.—KIEV, the capital, is picturesquely situated on the right bank of the Dnieper, which is here navigable, and crossed by a suspension bridge. It is an ancient place, and has been called 'the mother of Russian cities.' It was the capital of the kingdom in the ninth century. Kiev really consists of three towns, all more or less strongly fortified, and is the seat of the governor-general of the provinces Kiev, Podolsk and Volhynia. Its university is one of the most important of the empire. The connection by rail with Odessa and Kursk has done much to stimulate the trade of the town. Pop. (1911) 505,060.

Kiev Case, a famous Russian 'ritual murder' case, ending in the acquittal of Mendel Beiliss, November 10, 1913. The beginning was the murder on March 25, 1911, of the boy Andrew Yushchinski, by a gang of criminals. The body was carried to a cave in the suburbs of the city, and the mother notified that it was a case of Jewish ritual murder. The Jew-haters and *pogrom* inciters immediately raised the cry of vengeance. Mendel Beiliss was fixed upon as the criminal, irrespective of evidence, and a case worked up. The real offenders, however, were found, and justice, though tardy, rendered.

Kilauea (kē-lō-ā'ā), an active volcano in Hawaii, one of the Sandwich Islands. It has an oval crater, 9 miles in circumference, with a lake of red and boiling lava at the bottom.

Kilda (kil'da), ST., a small and rocky island in the Atlantic Ocean, belonging to Scotland, 40 miles northwest from the northwest extremity of the island of N. Uist.

Kildare (kil-dăr'), an inland county of Ireland, in the province of Leinster; length, 40 miles; breadth, 27 miles; area, 654 sq. miles. The surface is flat, or undulating, the soil a rich loam. Oats, potatoes, barley and turnips are raised. The chief occupations are agricultural. Principal rivers—Barrow, Liffey and Boyne. Chief towns—Naas (the county town), Athy and Newbridge. Pop. 63,566.—The town of KILDARE stands on an eminence 30 miles s. w. from Dublin. Near it is the common known as the 'Curragh of Kildare,' 4858 acres, owned by the British government. Pop. 1576.

Kilderkin (kil'der-kin), a liquid measure of 18 gallons, a term now almost exclusively used by brewers to denote a half-barrel.

Kilia (kē'lē-ya), a seaport of Roumania on the Kilia arm of the Danube. It is fortified, and has a good trade. Pop. 11,708.

Kilimanjaro (kil-ē-măn-jä'rō, the Great Mountain), a double-peaked, snow-clad mountain of Africa, in the territory of German East Africa, about 100 miles inland from the port of Mombasa, on the Suaheli coast. The highest peak, estimated at 18,881 feet, is the highest known in the African continent.

Kilkee (kil-kē'), a bathing place on the west coast of Ireland, County Clare. Pop. 1661.

Kilkenny (kil-ken'ni), a city of Ireland, in Kilkenny County, of which it is the capital, 73 miles s. w. from Dublin, delightfully situated on both sides of the Nore. The city contains several interesting ancient edifices, which give it a venerable and picturesque appearance. The manufacture of coarse woolens, brewing, and the working of Kilkenny black and foreign marbles into chimney-pieces, monuments etc., form the chief industries of the town. Pop. 10,609. —The county, which is in the province of Leinster, has an area of 796 sq. miles. The surface is generally level. The principal rivers are the Barrow, Nore and Suir. The soil is for the most part light and dry, some valleys being extremely fertile, and dairying is carried on extensively. The chief crops are wheat, oats, barley, potatoes and turnips. Beds of fine black marble are quarried near the town of Kilkenny, and anthracite coal is raised chiefly for local consumption. Pop. 79,159.

Killarney (kil-lär'ni), a market town of Ireland, in the county of Kerry, in the midst of beautiful scenery, within a mile of the celebrated lakes to which it gives its name. These lakes are three in number, the largest being about 5 miles long. They are interspersed with wooded islands, and the lofty banks are also richly wooded. In summer Kil-

larney is thronged with visitors. Pop. 5656.

Killdeer (kil'dēr; *Charadrius vociferus*), a variety of plover, common in America, and so called from its plaintive cry.

Killiecrankie (kil-li-kran'ki), a pass of Scotland, in the Grampians of northern Perthshire, above the river Garry, and on the Highland Railway. Here Claverhouse, Viscount Dundee, defeated the forces of William III.

Kilmarnock (kil-mär'nok), a parliamentary and municipal burgh of Scotland, in the county of Ayr, 19 miles S. W. from Glasgow. It has long been famed for the excellence of its woolen manufactures, especially carpets, but machinery, hats, hosiery, leather, boots, etc., are also produced in increasing quantities. It is a rapidly improving town, and has many fine buildings, both public and private. Pop. 35,091.

Kilmer (kil'mer), JOYCE, an American poet, born in New Brunswick, N. J. (1886-1919). He wrote *Trees and Other Poems*, *Main Street*, *Summer and Love*, and was one of the younger poets of great promise. He was killed in battle in France during the Great War, Aug. 1, 1918.

Kiln (kil), a structure of brick or stone used for drying, baking, burning, annealing and calcining various substances and articles, such as corn, hops, malt, cement, limestone, iron ore, glass, bricks, pottery, etc. The construction of kilns naturally varies with the special object for which they are designed, but the same principle is involved in all, that is, the generation of ample and regular heat with the least expenditure of fuel.

Kilogramme (kil'ō-gram), a French weight containing 1000 grammes = 2.2 lbs. Similarly *kilometer* = 1000 meters or 0.621 mile. See *Decimal System*. A kilogrammeter, a unit employed in the measurement of mechanical work, is the mechanical work expended in raising a body whose weight is 1 kilogramme (2.2046 lbs.) through the vertical height of 1 meter (3.2809 feet), and is equal to 7.233 foot-pounds.

Kilowatt (kil'ō-wät), in electricity, one thousand watts, a watt being the unit of power. A kilowatt equals 1.3406 horsepower, a kilowatt-hour is the energy resulting from an activity of one kilowatt continued for one hour, and a kilowatt-minute is the measure of work accomplished in one minute by a machine of kilowatt power.

Kilsyth (kil'sith), a town and police burgh of Scotland, in Stirlingshire, 12 miles N. E. from Glasgow. The inhabitants are employed in iron and coal mining and cotton weaving. Pop. 7292.

Kilwinning (kil-win'ing), a town of Scotland, in Ayrshire, 21 miles S. W. of Glasgow. Pop. 4440.

Kimberley (kim'ber-li), the capital of Griqualand West, Cape Colony, and the center of the South African diamond fields, which produces 98 per cent. of the world's output. It is connected by rail with Port Elizabeth and Cape Town, and its commerce is rapidly increasing. It lies on an open plain, has broad streets, and is well equipped with all modern requirements of life. It sustained a long siege by the Boers, 1899-1900. Pop. (1911) 49,888.

Kimberley, a northern district of Western Australia, brought into notice by the discovery of gold-fields in 1886. It contains immense tracts of splendid pasture, and much land suitable for the cultivation of wheat, sugar, tobacco, etc. The chief port for the district is Derby, on the Fitzroy River.

Kimchi (kim'hē), DAVID, one of the most famous Jewish rabbis of the middle ages, born towards the end of the twelfth century at Narbonne; died in 1240. He wrote commentaries on almost all the books of the Old Testament, and rendered essential service to Hebrew literature by the composition of his *Grammar and Dictionary of Hebrew Roots*. His father Joseph and his brother Moses also distinguished themselves as Hebrew scholars and theologians.

Kimmeridge Clay (kim'ér-ij), a bluish slaty clay, containing some carbonate and sulphate of lime, found in thick deposits in the south of England (Kimmeridge in Dorsetshire) and the north of France. It is a member of the Upper Oolite.

Kin. See *Descent*.

Kincar'dineshire, or THE MEARNS, a maritime county on the east coast of Scotland; area, 383 sq. miles. The Grampian Mountains, by which it is traversed northeast to southwest, occupy a large portion of its surface, their highest summit within the county being Battock, 2555 feet above sea-level. The principal crops are oats, barley, wheat, turnips and potatoes. Stonehaven is the county town. Pop. 40,923.

Kindergarten (kin'der-gär-tn), a German word signifying 'children's garden,' and the name given to a system of infant education

introduced by Friedrich Froebel, who was largely assisted in its propagation by the Baroness Marenholz-Bülow. The system is intended to bring out the moral and intellectual capabilities of very young children chiefly by observation; pictures, toys, tools, etc., suitable for the purpose, being introduced, so as to convert schooling into play, which according to Froebel is the child's most serious business. The first kindergarten was opened in 1840 at Blankenburg (Prussia). The system has spread widely and is now very common, especially in the United States.

Kinemacolor (ki-ne-ma-kul'ér), the name applied to moving pictures in colors based upon the three-color process of color photography.

Kinematics (kin-e-mat'iks), a branch of mathematics which treats of the motions of bodies independently of the forces which produce them.

Kinematograph. See *Kinetoscope.*

Kinesthesia (kin-es-thē'si-a), the sixth or muscular sense, by which man is conscious of the motions of the body and its parts. Deficient kinesthesia, carried to an extreme, may result in feebleness of mind, lack of control, and inability to live a sane and normal life.

Kinetics (kin-et'iks), that branch of the science of dynamics which treats of forces causing motion in bodies. See *Dynamics.*

Kinetograph (kin-et'ō-graf), an apparatus invented by Edison for taking pictures of moving objects. See *Vitascope.*

Kinetophone (ki-net'ō-fōn), a machine synchronizing motion pictures and the phonograph, perfected by Thomas A. Edison in 1913. In taking the picture, the phonographic recorder is attached to the picture machine, and it is only left for the actors to perform in the usual way.

Kinetoscope (kin-et'ō-skōp), an elaboration of a well-known toy by which a succession of snapshot portraits of objects in motion are enclosed in a cylinder with vertical slits and rapidly revolved. The retina of the eye retains each view a sufficient time to appear as one picture of objects in motion as viewed in the apparatus. The KINEMATOGRAPH is another device for the display of moving pictures, in which the pictures are thrown on a screen and are visible to an audience.

King (Anglo-Saxon, *cyning, cynig, cyng*), a person invested with supreme power over a state, nation, or people, whether this power be acquired by inheritance, election, or otherwise.

King, WILLIAM RUFUS, vice-president, born in Sampson County, North Carolina, in 1786; died in 1853. He was elected to Congress in 1810, and was senator from Alabama, 1819-40. President Tyler appointed him minister to France in 1844, he was elected president of the Senate in 1850, and vice-president of the United States in 1852.

King-bird. See *Tyrannus.*

King-crab (*Limŭlus*), a peculiar genus of crabs included in the order Xiphosura (sword-tailed), of the class Crustacea. They are found on the coasts of northern and tropical America and the Antilles, in the Eastern Archipelago and Japan. The head resembles a broad horseshoe shaped shield, with two pairs of eyes upon the upper surface, the second pair being the larger and forming the true visual organs. The mouth opens on the lower surface, and around it are six pairs of limbs with spinous joints attached. A second shield somewhat hexagonal in shape covers the abdominal part, and beneath it are the gills, or *branchiæ*, borne upon five pairs of appendages which represent the abdominal feet of the crab. The average length is about 2 feet. These crabs are destitute of swimming powers, and if placed on their backs they appear, like turtle, unable to recover their natural position. The commonest species is the *Limŭlus polyphēmus*, found chiefly on the North American coasts. The upper surface of the tail, as in other species, bears numerous spines. The *Limŭlus Moluccānus*, of the Moluccas, possesses a strongly serrated tail. This latter species is largely eaten.

King-crab (*Limŭlus Polyphēmus*).

Kingfisher (king'fish-ér), the name of a family of Insessorial birds distinguished by the elongated, stoutly formed, tetragonal bill, broad at the base, and terminating in a finely acute point; tarsi short, feet strong, toes somewhat elongated. The common kingfisher (*Alcedo ispida*) frequents the banks of rivers, and, perched on the bough of a tree, watches for fish. When the prey is perceived it dives into the water, secures the fish with its feet, and carries it to land, where it kills the prey, and swallows it entire. It is about 7 inches in length. This bird has been greatly celebrated in ancient poetic and legen-

dary lore, and is the subject of many superstitions. The American kingfisher (*Alcedo* or *Cerÿle alcyon*) is of a bluish-slate color, with an iron-colored band on the breast, while the head bears a crest

Spotted Kingfisher (*Cerÿle guttata*).

of feathers. The spotted kingfisher (*Cerÿle guttata*) is a native of the Himalayas, where it is called the fish-tiger. A large Australian species is known as the laughing jackass (which see).

Kinglake (king'lāk), ALEXANDER WILLIAM, an English historian, born in 1811, and educated at Eton and Cambridge. He was called to the bar in 1837, but abandoned law in 1856. He first made his mark in 1844 by the publication of *Eöthen*, a narrative of eastern travel. In 1857 he entered the House of Commons as member for Bridgewater, and took an active part in opposing several important bills of that period. The first volume of his *Invasion of the Crimea* appeared in 1863, and at once established his reputation as a brilliant historian; seven volumes followed at intervals, the eighth and completing volume in 1887, and they form together a magnificent record of this war. Died in 1891.

King of (or at) Arms, in England, an officer whose business is to direct the heralds, preside at their chapters, and have the jurisdiction of arms. There are three kings of arms in England—Garter, Clarencieux, Norroy, and an officer styled Bath King of Arms, attached to the order of the Bath. There are also Lion King at Arms for Scotland and Ulster King of Arms for Ireland.

King of the Herrings, the popular name of the *Chimæra monstrōsa*, or Arctic chimæra, a fish also known in certain localities by the name of 'Sea-cat.' See *Chimæra*.

Kings, BOOKS OF, form two books in the English and one book in the Hebrew canon of the Old Testament. Besides their own unity the books of Kings are closely connected with first and second of Samuel, and, following these, form the third and fourth in what is known as the four books of the kingdom. From internal evidence it would seem that these were written by a series of contemporary authorities, with additions and glosses made by a later writer. The history, as related in the books of Kings, begins with the close of David's reign, and carries the events onward to the capture of Jerusalem and the destruction of the temple. This embraces, according to the received chronology, a period of upwards of 400 years (B.C. 1015-588), and includes the history of both the kingdoms of Judah and Israel. This chronology, however, is unsatisfactory, and has been much disputed. In comparing these books with the Chronicles it is found that while the former describes the divided kingdom of Israel and Judah, the latter is occupied almost exclusively with Judah; and further, that the books of Kings seem to have been compiled under prophetic and the Chronicles under priestly influence.

King's Advocate. See *Advocate*.

King's-clover, an English name of the *Melilōtus officinālis*; called also the *Common* or *Yellow Melilot*.

King's College, original name of Columbia University (which see).

King's College, Canada, an institution maintained by the Anglican Church, situated at Windsor, Nova Scotia. It confers degrees in arts, science, engineering, law and theology. The Engineering School is situated in Sydney and Glace Bay, and the Law School in St. John, N. B.

King's College, London, a proprietary institution incorporated in 1829, and reincorporated in 1882. It was established for the purpose of providing education in accordance with the principles of the Church of England, and gives instruction in theology, general literature, science, engineering and medicine

King's County, an inland county of Ireland, province of Leinster; area, 772 sq. miles. A large portion of the N. and N. E. part is covered with the Bog of Allen, and of the S. with the Slieve Bloom Mountains. Limestone occurs in the N. W., and has been quarried. The principal produce is oats, wheat and potatoes, with no manufactures. The county town is Tullamore. Pop. 60,187.

King's Evidence. See *Approver*.

King's-evil. See *Scrofula.*

Kingsley, CHARLES, an English clergyman, novelist, and poet, born in 1819; died in 1875. He was educated at King's College, London, and afterwards at Magdalen College, Cambridge, where he took his degree in 1842. He was subsequently appointed curate of Eversley, in Hampshire, and published a volume of twenty-five *Village Sermons*, which became popular. In 1848 he published a poem, *The Saints' Tragedy*. This was followed in 1849 by the novel *Alton Locke*, in which his opinions of the social and economic questions of the time are powerfully expressed. Upon the same lines, but dealing with the subject from the agricultural side, followed his novel of *Yeast* in 1851. In 1853 was published *Hypatia*, and in 1855 *Westward Ho*, both brilliant historical novels, the former dealing with the early Christian church, the latter with the South American adventurers of the Elizabethan era. Among his other well-known works are *Two Years Ago*; *Hereward, the Last of the English*; *Glaucus* and *The Water Babies*. He was appointed professor of modern history at Cambridge in 1859, and canon of Chester in 1869. His *Letters and Memories of his Life*, edited by his wife, was published in 1877.

Kingsley (kings'li), HENRY, novelist and brother of Charles Kingsley, was born in 1830, and died in 1876. Educated at King's College, London, and Worcester College, Oxford, he left England to become an Australian colonist in 1858. On his return he contributed largely to magazines and reviews. Of the novels which he published between 1859 and 1874 *Geoffrey Hamlyn* was the first, while *Ravenshoe* and *Austin Elliott* are considered the best. He was also for a short time editor of the *Edinburgh Daily Review*.

King's Lynn. See *Lynn.*

Kingston (kings'tun), a city of Ontario, Canada, founded in 1783 on former site of Fort Frontenac, halfway between Montreal and Toronto at the junction of Lake Ontario, St. Lawrence and Rideau rivers. Has a good harbor and large shipping trade; also locomotive works, shipbuilding yards, dry docks, etc. It is an important educational center and military station. Here are Queen's University, Royal Military College, Ontario Penitentiary and Rockwood Asylum. Pop. (1913) 21,015.

Kingston, a borough in Luzerne County, Pennsylvania, on the north branch of the Susquehanna, one mile from Wilkes-Barre. It is in a coal-mining region, and has manufactures of hosiery, machinery, etc. Pop. 6449.

Kingston, a city, county seat of Ulster Co., New York, on the Hudson River, 88 miles north of New York City; a railroad and shipping center, and the gateway to the Catskills. Its manufactured products include cigars, shirts, metal wares, lace curtains, hardware, road machinery, boats, automobiles, cement. It came into the possession of the English in 1664, and was the first capital of New York state. It became a city in 1872. It is served by six railroads and has abundant and excellent facilities for water transportation. Pop. 25,908.

Kingston, the capital of the island of Jamaica, on the south coast, with straight and regular streets and houses, generally of brick. The principal public buildings are the English and Scotch churches, hospitals, courthouse, theater, penitentiary, barracks and jail. The harbor, which is 6 miles long by 2 miles wide, is separated from the sea by a narrow slip of low land, on which is situated Port Royal, and which forms an excellent anchorage for vessels of any size. It was ruined by an earthquake in 1907. Pop. 46,542.

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RUDYARD KIPLING

From a recent photograph taken while he was on a speaking tour.

Kingston-on-Hull. See *Hull.*

Kingston-upon-Thames, a town of England, county of Surrey, on the right bank of the Thames, 12 miles from Hyde Park Corner. Its antiquity is proved by numerous Roman remains found in its vicinity, and the Saxon kings were crowned here from Edward the Elder to Ethelred II. The stone on which the kings were crowned is preserved within an iron enclosure near the marketplace. In the neighborhood are Bushy and Richmond parks, and Hampton Court Palace. It is a suburban residence place and summer resort for Londoners. Pop. 37,977.

Kingstown (kings'town), a seaport of Ireland, on the south shore of Dublin Bay, 6 miles S. E. of Dublin. Its most interesting object is its magnificent harbor, commenced in 1816 and finished in 1859 at a cost of $4,125,000. There are two piers, enclosing an area of 250 acres, with a depth varying from 15 to 27 feet. Kingstown has regular steam communication with Holyhead, in North Wales, and is visited annually by 1600 to 1800 vessels. It is much frequented for sea-bathing. Pop. 17,377.

King's-yellow, a pigment, the basis of which is orpiment or tersulphide of arsenic.

King-vulture, the *Sarcorhampus Papa* of the intertropical regions of America. It is about 2½ feet in length, and upwards of 5 feet across the expanded wings. The other vultures are said to stand quietly by until this, their monarch, has finished his repast.

Kingwood, a Brazilian wood believed to be derived from a leguminous tree, a species of *Triptolemæa*, but by some referred to *Brya ebĕnus*. It is beautifully streaked with violet tints or West Indian ebony, and is used in turning and small cabinet-work. Called also *Violet-wood.*

Kinkajou (kink'a-jou; *Cercoleptes caudivolvŭlus*), a plantigrade, carnivorous mammal of northern South America, allied to the bear family. In habits it is omnivorous, nocturnal and docile when captured. In shape it resembles the lemur, the legs are short, fur close and woolly, tail long and prehensile. Being fond of honey, they make frequent forays upon the nests of bees.

Kino (kē'nō, kī'nō), an astringent extract, resembling catechu, obtained from various trees. The original is procured from *Pterocarpus Marsupium*, a handsome East Indian tree, nat. order Leguminosæ, which yields a valuable timber. Kino is the juice of the tree dried without artificial heat. African or Gambia kino is obtained from another species (*P. erinaceus*), a native of tropical Western Africa. Dhak-tree or Bengal kino is the product of *Butea frondosa*; while Botany Bay kino is got from various species of Eucalyptus. Kino consists of tannin, gum and extractive, and is a powerful astringent.

Kinsale (kin-sāl'), a seaport town of Ireland, in the county and 14 miles south of Cork, near the mouth of the Bandon, which here forms a magnificent harbor. The exports consist chiefly of farm produce, and its fishery is good. Pop. 4605.

Kinston, a town, capital of Lenoir county, North Carolina, on the Neuse River, 23 miles W. N. W. of Newbern. It is an important shipping point for cotton and tobacco, and has hosiery, yarn, silk and lumber mills, etc. Pop. 6095.

Kintyre. See *Cantyre.*

Kiosk (ki-osk'), a Turkish word signifying a kind of open pavilion or summer house, generally constructed of wood, straw or other light materials, and supported by pillars. It has been introduced into other countries.

Kioto (kī-ō'to), or SAIKIO, a large city of Japan, in the island of Hondo, in an extensive plain 250 miles southwest of Yeddo, connected by railway with its port, Osaka, and some 6 miles from Lake Biwa. It was formerly the special residence of the mikado, and the seat of his *dairi* or court, and hence the ecclesiastical capital of the empire. It is about 4 miles long and 3 miles broad, and abounds in exquisitely laid-out gardens, palaces and temples. It is the seat of a university, founded in 1897, and the center of learning, and of artistic manufactures, such as carved ivory ornaments, lacquered ware, bronze ornaments, brocaded and embroidered silks, etc. Pop. (1908) 442,462.

Kipling, RUDYARD (1865-), an English novelist and poet, born in Bombay, India. He was educated in England, returning to India in 1880, where he began to contribute verses and stories to local periodicals. Soon his tales of the life of the British soldier in India began to find their way to England and America, and he sprang into the front rank among popular favorites. *Departmental Ditties* was first published in 1886 at Calcutta, and was followed by *Plain Tales from the Hills* and *Soldiers Three.* During 1888 and 1889 he wrote *The Story of the Gadsbys, In Black and White, Under the Deodars, The Phantom Rick-*

shows, and *Wee Willie Winkie*. *Life's Handicap* and *The Light That Failed* were written in 1890. The publishers of England and America were at first loath to undertake the publication of these stories, which struck a new vein in literature, but when at length he found a publisher his fame was established instantly. He visited America, married the daughter of H. Wolcott Balestier of New York, and resided in Vermont from 1892 to 1896. His impressions of the country are contained in his *American Notes*. In 1907 he received the Nobel prize for literature. Among his many books are *Many Inventions*, *The Day's Work*, *Stalky and Co.*, *Kim*, *Just So Stories*, *Puck of Pook's Hill* and *Rewards and Fairies*. His verses, which have gained as wide popularity as his fiction, include 'The Recessional,' 'The White Man's Burden,' 'The Vampire,' 'McAndrew's Hymn,' 'If,' and 'For All We Have and Are,' the latter written in 1914 at the beginning of the European war. He contributed many articles on the war to the magazines. His later books are *France at War*, *Fringes of the Fleet*, *Sea Warfare*, and (in 1917) *A Diversity of Creatures*.

Kiptchaks (kip-chaks'), or KAPTCHAKS, the name given to a Tartar or Mongolian race. They were known as the Golden Horde, and founded a khanate about the thirteenth century, and their territory comprised the region watered by the Dnieper, Don, Volga and Ural.

Kiratpur (kē-rat-pōr'), a town of India, Bijnor district, N. W. Provinces. Pop. 12,728.

Kirby (kir'bi), WILLIAM, a distinguished English entomologist, born in Suffolk in 1759; died in 1850. He was educated at Ipswich, and at Caius College, Cambridge, and was appointed rector of Barham in 1796. Here his early love of natural history was developed, and on the establishment of the Linnæan Society in 1788 he was one of its first members. In 1802 appeared his work on English bees, entitled *Monographia Apum Angliæ*, which established for him a European reputation. A few years afterwards he formed a literary copartnery with Mr. Spence, and the result was the publication, in 1815, of the first volume of *Kirby and Spence's Introduction to Entomology*, of which the second volume appeared in 1817, and the third and fourth in 1826. It gives in the form of letters a familiar description of insects in all their phases as regards species, food, habits and qualities, beneficial or destructive. In 1830 Mr. Kirby was appointed to write one of the *Bridgewater Treatises* (which see), and he accordingly produced his *Habits and Instincts of Animals with reference to Natural Theology*. He wrote a description of the Arctic insects for *Captain Parry's Voyage*, and also for Sir John Richardson's *Fauna Boreali-Americana*.

Kircher (kirh'ér), ATHANASIUS, a learned German Jesuit, born in 1602; died in 1680. He was professor of mathematics, philosophy and the oriental languages at Würzburg, but the pope called him to Rome, where he at first taught mathematics in the Collegium Romanum.

Kirchhoff (kirh'hof), GUSTAV ROBERT, a German physicist, born in 1824. He was appointed professor of physics in the University of Heidelberg in 1854. He gave his attention to the subjects of heat, electricity and magnetism. Conjointly with Bunsen he discovered the spectroscope. He died in 1887.

Kirghiz, KIRGHIS (kir'gēz), a nomadic Mongol-Tartar race, numbering in its various branches about 3,000,000, and inhabiting the steppes that extend from the lower Volga and the Caspian Sea in the west to the Altai and Thian-Shan Mountains in the east, and from the Sea of Aral and the Sir-Daria in the south to Tobol and Irtish on the north. The Kirghiz are a slow, sullen people, small in stature, bad walkers, but born riders. Their food is chiefly mutton and horseflesh, and their drink the nourishing fermented mare's milk called *koumiss*. They dwell in a *yurt* or semi-circular tent, the wooden framework of which is covered with cloth or felt. Agriculture is almost unknown; their possessions are in sheep, horses and camels, and their manufactures consist of cloth, felt, carpets, leather, etc. They profess Mohammedanism. Most of the varied Kirghiz tribes are, at least nominally, under Russian government.

Kirin (kir'in), a division or province and town of the Chinese territory of Manchuria, on the navigable Sungari River. Boats and junks are built here and it has a mint. The town, also called Kirinoola or Girin, has a pop. of 120,000. See *Manchuria*.

Kirkcaldy (kir-ka'di), known as the 'Lang Toun,' a seaport of Scotland, county of Fife, on the north shore of the Firth of Forth. It consists principally of one long, irregular street, which, including suburbs, extends for about 3 miles west to east. It has numerous flax-spinning mills, linen and damask factories, sailcloth and net factories, roperies, machine factories, etc., and

the largest linoleum and floor-cloth works in the world. The harbor is obstructed by a sandbank at its mouth, and is dry at ebb tide. The foreign trade is with the Baltic and the north of Russia. Adam Smith, author of the *Wealth of Nations*, was born here. Pop. (1911) 39,601.

Kirk, ELLEN WARNER, author, born in Southington, Connecticut, in 1842, married John Foster Kirk in 1879. Her books include *Love in Idleness*, *Through Winding Ways*, *A Lesson in Love*, etc.

Kirk, JOHN FOSTER, historian, born at Fredericton, New Brunswick, in 1824. He was secretary to the historian Prescott 1847-59, and wrote *History of Charles the Bold*. He edited a supplement to *Allibone's Dictionary of Authors*, edited *Lippincott's Magazine* 1871-86, and was lecturer in history at the University of Pennsylvania. He died in 1904.

Kirkcudbright (kir-kō'bri), a maritime county in the south of Scotland; area, 898 square miles. There are extensive mountainous districts; the rivers include the Dee and the Urr; and there are numerous lakes, the largest of which is Loch Ken. Granite is quarried in several districts, while lead, copper and iron have been found. The soil and climate are most suitable for green crops, and great attention is given to the rearing of cattle for the English markets. Pop. 39,383. The county town of the same name is a port on the Dee, 25 miles southwest of Dumfries. Pop. 2388.

Kirkintilloch (kirk-in-til'loh), a burgh of Scotland, county of Dumbarton, on the Forth and Clyde canal, 6 miles by rail north by east of Glasgow. It has iron foundries, cotton factories, chemical works and coal mines. Pop. 10,680.

Kirksville (kirks'vil), a city, capital of Adair County, Missouri, 70 miles N. W. of Quincy, Illinois. It has a State normal school, and a school of osteopathy, and contains iron-works, canning, pickle and washing-machine factories, etc. Pop. 6347.

Kirkwall (kirk'wal), a seaport of Scotland, capital of the county of Orkney, on a bay on the east side of the island of Pomona or Mainland. Here are the old cathedral of St. Magnus (founded in 1137), the old castle of the earls of Orkney, and the ruins of the bishop's palace, in which King Hako died. The harbor is secure and commodious. Pop. 3711.

Kirman. See *Kerman*.

Kirmanshah. See *Kermanshah*.

Kirschwasser (kirsh'vàs-ẽr), a liqueur distilled in Germany and Switzerland from the fermented juice of the small black cherry.

Kisfaludy (kish'fa'lō-di), ALEXANDER, a Hungarian poet, was born in 1772; died in 1844. In 1793 he entered the Austrian army as a cadet, and made campaigns in Germany and Italy. During a residence in Vienna, as a member of the royal Hungarian body-guard, he devoted himself to the translating of Tasso into Hungarian. In 1801 he left the army, and employed himself almost exclusively in agriculture and in literary pursuits. His principal lyrical work, *Himfy Szerelmei* ('Himfy's Love Songs'), gave him a first place among his native poets. He afterwards wrote the historical dramas *John Hunniades* and *Ladislaus the Cumanian*. His brother Charles, who almost equaled him in literature, died in 1830.

Kishinev (kē-shē-nyof'), or KISHINAU, a town of Russia, capital of the government of Bessarabia, on the Byk, a tributary of the Dniester. In 1812 only a small miserable town, it is now the seat of the civil and ecclesiastical authority, has many churches, schools, theaters and large markets for cattle and corn. Pop. 125,787.

Kismayu (kis-ma'yū), a seaport on the coast of East Africa, south of the mouth of the Juba, the administration of which was conceded by the Sultan of Zanzibar to the Imperial British East Africa Company in 1889. Pop. 8000.

Kisoriganj (kēs-ō-rē-gunz'), a town of Hindustan, in Bengal, 13 miles east of the Brahmaputra. Pop. about 13,000.

Kiss, the mutual touching of the lips. With some nations, as the Germans and French, men often kiss each other after a long absence, etc. Kissing the hand of the sovereign forms part of the ceremonial of all European courts. Kissing the foot is a common oriental sign of respect, and the popes have required it as a sign of respect from the secular power since the eighth century. When this ceremony takes place the pope wears a slipper with a cross, which is kissed.

Kissingen (kis'ing-en), a watering place of Bavaria, on the Saale, 30 miles north of Würzburg. The springs, five in number, and all saline, contain a large quantity of carbonic acid gas, and are used both internally and as baths. Besides 20,000 visitors annually

attracted by the baths, about 500,000 bottles of water are annually exported. A complete course of water drinking and bathing occupies twenty-eight days. Pop. 4757.

Kistna (kist'na), or KRISHNA, a river of India, which rises among the Western Ghâts, about 40 miles from the Malabar coast, and flows in a general easterly direction, partly along the frontier of Hyderabad and the Madras Presidency, and falls into the Bay of Bengal 200 miles north of Madras; length, including windings, 800 miles. It is almost useless for inland navigation.

Kit-Cat Club, an English club formed about 1688, of a political character.

Kitchener (kich'en-er), HORATIO HERBERT, Baron, an English soldier, born in 1850. He entered the army in 1871, was in civil life 1874-82, took part in the Nile expedition of 1884, and commanded a brigade in the Suakim campaign of 1888. He was governor of Suakim 1886-88, adjutant-general of the Egyptian army 1888-92, and sirdar of this army, 1890-98. Promoted major-general in 1896, he commanded the Khartoum expedition of 1898 in which he completely defeated the Arabs and recovered the Soudan for Egypt. This brought him the title of Baron Kitchener of Khartoum. He took an important part in the Boer war, was promoted lieutenant-general and field marshal, was made Earl Kitchener and became war minister in the European war in 1914, and in June, 1916, was drowned in a torpedoed vessel.

Kitchener, a city of Ontario, 60 miles W. of Toronto. It has many factories with an output of over $20,000,000. Articles manufactured include furniture, rubber goods, and various foundry products. Pop. 19,767. Formerly known as BERLIN.

Kitchen-Middens (kich'en-mid-nz), the name given to shell mounds in which are embedded the refuse of prehistoric peoples, consisting of stone and horn implements, pottery, etc. These heaps are found in Denmark and along the coasts of N. and S. America.

Kite (kit), a raptorial bird of the falcon family, differing from the true falcons in having a somewhat long forked tail, long wings, short legs and weak bill and talons. This last peculiarity renders it the least formidable of the birds of prey. The common kite, glead, or glede (*Milvus ictinus, regalis, vulgaris*), preys chiefly on the smaller quadrupeds, birds, young chickens, etc. It usually builds in the fork of a tree in a thick wood. The common kite of America is the *Ictinia Mississippiensis.*

Kite, Man-lifting. The familiar kite has for many centuries been used as a toy, its first scientific use being when Dr. Franklin employed it to bring down electricity from the clouds. Of late years, in its new form of the box or cellular kite, it has come into use in observations of the atmosphere, the conditions of which at great heights have thus been discovered. Among the well-known types are the aërocurve kite invented by C. H. Lamson. It is of cellular construction, the forward supporting surfaces are curved like the wings of a bird, while the rear cell is flat and smaller in size, forming a tail-like rudder. (See Fig. 1.) The Malay kite (Fig. 2) is a form used in the Malay Peninsula. The frame consists of two sticks crossing each other at right angles, one of which is made so elastic that it bends in the wind and forms a bow. This bow balances the kite so that it flies without a tail. In the tetrahedral kite (Fig. 3), the frame is in the form of a tetrahedron, or is built up of individual parts, the frame of each forming a tetrahedron. Dr. Alexander Graham Bell's great tetrahedral kite in 1907 lifted Lieut. Selfridge 168 feet into the air, and sustained him for 7 minutes.

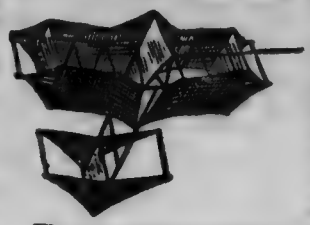


Fig. 1.—Aërocurve Kite.

Fig. 2.—Malay Kite.

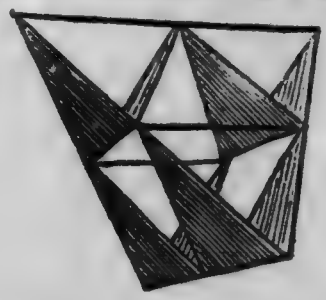


Fig. 3.—Tetrahedral Kite.

Kits Coity House, a dolmen, the best known in England, on a hillside near Aylesford. Three upright blocks of sandstone support a covering stone 12 feet long, forming a chamber. The name is supposed to come from old British words signifying 'the tomb in the wood.' See *Dolmen.*

Kittiwake (kit'i-wāk), a species of gull (*Larus tridactylus*), found in great abundance in all the northern parts of the world wherever the coast is high and rocky.

Kitto (kit'tō), JOHN, was born at Plymouth, England, in 1804; died at Cannstadt, in Germany, in 1854. Losing his hearing, he engaged in literature, producing the *Pictorial Bible, Cyclopedia of Biblical Literature,* etc. Engaged in missionary work at Malta and Bagdad. Pensioned by the crown.

Kitzingen (kits'ing-ĕn), a walled town of Bavaria, 10 miles east-southeast from Würzburg, partly on the right and partly on the left bank of the Main. Pop. 8489.

Kiu-kiang. See *Kew-kiang.*

Kiung-chow (kē-öng'chou'), a seaport of Japan in the island of Formosa, open to foreign trade. Pop. 40,000.

Kiushiu (kyō'shyō'), one of the three principal islands of Japan, separated from Corea by the Strait of Corea, and from Hondo by the Strait of Sikoku. Its surface is mountainous and there are a number of active volcanoes. It produces coal, copper, tobacco, etc. Nagasaki is situated here.

Kiwi-Kiwi. See *Apteryx.*

Kizil-Irmak (kiz'il-ir-mäk; the Turkish for 'Red River'), a river known to the ancients as the Halys, the principal river of Asia Minor. Rising in the east of the peninsula, it flows in a circuitous route for about 500 miles, and enters the Black Sea near Sinope.

Kizil-Kum (kiz'il-kōm), an extensive sandy desert in Asia, to the southeast of Lake Aral, occupying a great part of the space between the Amu Daria or Oxus and the Sir-Daria, in what is now Russian territory.

Kladno (klad'nō), a town of Bohemia, 13 miles N. W. of Prague, with coal and iron mines, iron and steel works. Pop. 18,600.

Klagenfurt (klä'gen-fōrt), a town of Austria, capital of Carinthia, 40 miles north-northeast of Laibach, on the Glan. Among its public edifices are the cathedral, the town church, the bishop's palace, provincial house of assembly, town house, etc. The manufactures consist of woolens, leather, white lead, etc. Pop. (1911) 28,011.

Klapka (klop'ko), GEORGE, a Hungarian general, born in 1820; educated in the artillery school in Vienna, and appointed to a command in 1847. In the Hungarian rebellion of 1848 Klapka joined the revolt as chief of the staff, and in 1849 he took command of an army corps. For the ability which he displayed he was made minister of war by Kossuth. When the Hungarians were defeated, Klapka refused to capitulate, and shut himself up in the fortress of Komorn, where he made a brilliant defense. Ultimately he surrendered under honorable conditions. He was compelled to leave the country, and so passed many of his years in exile. He wrote *Memoirs of the War of Independence* (1850), and *The National War in Hungary and Transylvania.* Died in 1892.

Klaproth (klâp'rōt), JULIUS HEINRICH, a German orientalist and traveler, born in 1783; died in 1835. He traveled through Asia to the Chinese frontier, and also in the Caucasus. Having taken up his permanent residence in Paris in 1815, he was appointed professor of Asiatic languages, and retained this situation till his death. Among his numerous writings may be mentioned his *Description of the Eastern Caucasus, Description of the Russian Provinces Between the Caspian and the Black Seas, Catalogue of the Chinese and Manchu Books and MSS. in the Royal Library of Berlin, Asia Polyglotta* and *Collections of Egyptian Antiquities.*

Klattau (klät'ou), a town of Bohemia, on a steep height in the beautiful and fertile valley of the Rasenbach, 73 miles S. W. Prague. It is an ancient place, and has six times been almost burned down. Pop. 12,793.

Klausenburg (klou'zĕn-bŭrh; Hungarian *Kolosvár*), an Austrian town, the capital of Transylvania, on the Little Szamos. It has a noble cathedral, and the house where Corvinus, Hungary's great king, was born. There are various manufactures. Pop. 42,295.

Klausthal (klous'täl), a town of Prussia, in Hanover, 48 miles S. S. E. of Hanover, the principal mining town of the Hartz. Pop. 8565.

Kléber (klā-bär), JEAN BAPTISTE, a French general, born at Strasburg in 1754, and assassinated in Cairo by a Mohammedan fanatic in 1800. He was one of the ablest of the revolutionary generals, accompanied Napoleon to

Egypt and was left by him as commander-in-chief of the French forces.

Klephts (klefts), properly *robbers*, the name formerly given to those Greeks who kept themselves free from the Turkish yoke in the mountains, and carried on a perpetual war against the oppressors of their country.

Kleptomania (klep-to-mā'ni-a; Greek *kleptō*, I steal), a supposed species of insanity manifesting itself in a desire to pilfer. In admitting the plea of kleptomania great caution is needed. The best way to arrive at a judgment is to consider the previous character and personal interests of the person charged; to determine the value and usefulness of the article appropriated; the methods of the appropriation and its probable motive. Thus when a baronet steals broken crockery, and a clergyman purloins innumerable cheap Bibles, the ordinary motives for theft are inapplicable, and when the article is taken ostentatiously there is then a strong case in favor of kleptomania.

Klondike (klon'dīk), the region drained by the Klondike River, Canada, in the Arctic Zone. In shape it represents an inverted triangle, the lower point jutting into Alaska. The temperature resembles that of Alaska, but the atmosphere is much drier than the western portion. The summer lasts only from July until the middle of October; during this season the hills are clothed with verdure and trees of spruce, cottonwood, pine, etc., are numerous. The levels are carpeted with a luxuriant growth of Arctic moss. In winter the streams and soil become solidly frozen, being seldom thawed, except the upper strata, even in summer. Under these adverse conditions it brings forth an exquisite flora: the Linnæa, violets, cornel and other wild flowers. Wheat, barley, oats, rye and many vegetables are successfully raised. Mosquitoes, midges and flies infest the country during summer. Alaska and British Columbia have long been known to contain rich deposits of gold. In 1896 gold was discovered in abundance along the Klondike River, and since then this region has yielded profusely, the amount taken being valued at many millions of dollars. It has been estimated that from twelve to twenty millions of dollars have been taken annually from the mines. The severe frosts make the working of the auriferous gravel exceedingly difficult, as it must first be thawed by artificial heat; and water, the great desideratum of the placer-miner, is, from the same cause, very meager in supply. Dawson is the only town in the district, and is the distributing point for the mining region.

Klootz, Anacharsis. See *Cloots*.

Klopstock (klop'stok), Friedrich Gottlieb, a celebrated German poet, was born in 1724; died in 1803. He studied theology, and commenced in solitude the first canto of his sacred epic, *The Messiah*. The three first cantos of this grand and interesting work appeared in 1748, and excited universal attention.

Knapp (nap), Martin Augustine, justice, was born at Spofford, New York, in 1843. Admitted to the New York bar in 1869, he was corporation counsel at Syracuse 1877-83, and was appointed on the Interstate Commerce Commission in 1891, becoming its chairman in 1898. In 1910 he was appointed presiding justice of the Court of Commerce, created by Congress in that year.

Knapsack (nap'sak), a bag of leather or strong cloth for carrying a soldier's necessaries, and closely strapped to the back between the shoulders.

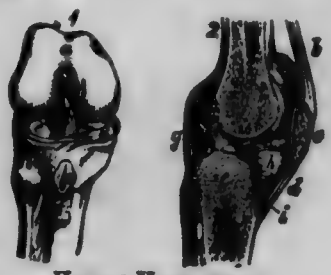
Knapweed (nap'wēd), the popular name given to some species of *Centaurea*. *C. nigra*, black knapweed; and *C. scabiosa*, greater knapweed, are common weeds, being rough, hardy, herbaceous plants growing by waysides, etc.

Knaresborough (nārs'bur-o), a town of England, county of York (West Riding), on the left bank of the Nidd. 17 miles west by north of York. The environs of the town abound with objects of interest, including the ruins of the castle, founded in 1170; the dropping well possessed of powerful petrifying properties; and several curious excavations. Pop. 5315.

Knaus (knous), Ludwig, a German painter, born in 1829. He studied at Düsseldorf under Karl Sohn and Schadow, but struck out a path for himself, painting subjects from everyday rustic life. In 1852-60 he lived mostly in Paris, and painted the chief pictures of his first period, *The Golden Wedding*, *The Baptism* and *The Setting-out for the Dance*. In 1861-66 he resided in Berlin, and from 1866 to 1874 he lived in Düsseldorf, and to this period belong some of the pictures on which his fame as a genre painter is most securely founded: *The Children's Feast*, *The Funeral*, *The Goose-Girl*, *Brothers and Sisters*, etc. In 1874 he received an appointment in the Art Academy of Berlin.

Knee (nē), or Knee-joint, that joint in the lower limbs of man which

corresponds to the elbow in the upper, and is formed by the articulation of the femur or thigh-bone with the tibia, or large bone of the leg. The lower end of the femur terminates in two oblong rounded masses, called the *condyles* of the femur, which rest in two cavities in the upper part of the tibia; interposed between the two bones are the *semilunar cartilages*, which diminish the pressure of the femur on the tibia, and prevent the



HUMAN KNEE-JOINTS.

1, Right Knee-joint laid open from the front, to show the internal ligaments. *a*, Cartilaginous surface of lower extremity of the femur, with its two condyles. *b*, Anterior crucial ligament. *c*, Posterior do. *d*, Internal semilunar fibrocartilage. *e*, External fibrocartilage. *f*, Part of the ligament of the patella turned down. *g*, Bursa or sac containing synovial fluid, laid open.

2, Longitudinal Section of the Left Knee-joint. *a*, Cancellous structure of lower part of femur. *b*, Tendon of extensor muscles of leg. *c*, Patella. *d*, Ligament of the patella. *e*, Cancellous structure of head of tibia. *f*, Anterior crucial ligament. *g*, Posterior ligament. *h*, Mass of fat projecting into the cavity of the joint below the patella. *i*, Bursa.

displacement of the former. In front of the knee-joint is the *patella* or *knee-pan*. The joint is capable of flexion and extension, and of a very slight rotatory movement. The accompanying figures and explanations will enable the joint and its chief features to be thoroughly understood. See also *Leg*.

Kneller (nel'ẽr), SIR GODFREY, portrait painter, born at Lübeck about 1648; died in London in 1723. He studied under Bol and Rembrandt at Amsterdam, visited Rome, Venice and Hamburg, and gained a good reputation for historical paintings as well as portraits. He came to England in 1684, and succeeded Sir Peter Lely as court painter to Charles II. He filled the same position under James II, William III, Anne and George I. The last named made him a baronet. In addition to all the celebrities of the English court, including the *Ten Beauties of the Court of William*, now at Hampton Court, he painted the 48 members of the Kit-Cat Club, and portraits of ten sovereigns, including Louis XIV and Peter the Great. He was highly praised by Dryden, Pope, Addison and Steele, but his works have more value historically than as works of art.

Knight (nit), in feudal times, a man admitted to a certain military rank, with special ceremonies. See *Chivalry*. In modern usage one who holds a certain dignity conferred by the sovereign of Great Britain, and entitling the possessor to have the title of *Sir* prefixed to his Christian name, but not hereditary like the dignity of baronet. The wives of knights have the legal designation *Dame* for which *Lady* is usually substituted. See *Knighthood, Orders of*.

Knight, CHARLES, English editor and publisher, born in 1791; died in 1873. He succeeded his father as a bookseller in Windsor, and for a number of years he edited a Windsor newspaper. Having removed to London in 1823 he commenced *Knight's Quarterly Magazine*, which contained the earliest contributions to literature of Macaulay, Praed and others. In 1827 he undertook the superintendence of the publications of the Useful Knowledge Society, for which he did a great deal of valuable work, superintending and publishing the *Library of Entertaining Knowledge;* the *Penny Magazine* and the *Penny Cyclopædia*, afterwards remodeled as the *English Cyclopædia*, etc. Among the many works edited by him the edition of Shakespere is the most esteemed. His *Half Hours with the Best Authors* is very popular. The most important of his own writings, the *Popular History of England*, occupied him seven years, 1854-61. An autobiography, *Passages of a Working Life During Half a Century*, appeared in 1863-65.

Knighthood, ORDERS OF, the name given to organized and duly constituted bodies of knights. The orders of knighthood are of two classes—either they are associations or fraternities, possessing property and rights of their own as independent bodies, or they are merely honorary associations established by sovereigns within their respective dominions. To the former class belonged the three celebrated religious orders founded during the Crusades—Templars, Hospitallers and Teutonic Knights. The other class, consisting of orders merely titular, embraces most of the existing European orders, such as the order of the Golden Fleece, the order of the Holy Ghost, the order of St. Michael. The British orders are the order of the Garter, the Thistle, St. Patrick, the Bath, St. Michael and St. George, the Star of India, and the order of the Indian Empire. The various orders have each their

appropriate insignia, which generally include a badge or jewel, a collar, a ribbon of a certain color, and a star.

Knight Service, the original and most honorable species of feudal land tenure. The holder of a knight's fee, the extent of which is now doubtful, was bound to render military service to his lord for forty days in every year if required.

Knights of Columbus, an American benevolent society, founded in 1882, of Roman Catholic membership. The society did similar service to that of the Y. M. C. A. during the European war, and by March, 1918, had raised a war fund of nearly three and a quarter million dollars to support the welfare work which the society conducted among the troops.

Knights of Honor. A fraternal benevolent society, founded in the United States in 1873; membership 22,000. Knights and Ladies of Honor, founded in 1877 in the United States, membership 90,000.

Knights of Labor, a labor organization founded at Philadelphia in 1869. Its operations were secret, but its professed object was the amelioration and protection of the laboring classes. Its membership is now much reduced, labor unions and the American Federation of Labor, etc., taking its place. See *Labor Organizations.*

Knights of Pythias, a fraternal society founded in the United States in 1864, to disseminate the principles of friendship, charity and benevolence, apart from sectarianism and politics. Its cardinal principles are toleration in religion, obedience to law and loyalty to government. There are three degrees, called ranks—page, esquire, knight. The endowment rank has for its object the furnishing of a reliable and economical life insurance.

Knights of St. John. See *John (Knights of St.).*

Knights of the Golden Eagle. An association founded in 1873 in the United States, for social and benevolent purposes. It has 86,000 members.

Knights of the Maccabees. An association of benevolent character, founded in 1881. It has in the United States about 300,000 members.

Knights Templars. See *Templars.*

Knitting (nit'ing), an industrial and ornamental art allied to weaving, but of much later origin. It consists in forming a series of loops with a single thread, through which another row of loops is passed, and so on consecutively; differing from crochet in so far as the series of loops are not thrown off and finished successively. In hand-knitting steel wires are used to form the loops on. For manufacturing purposes hand-knitting has been entirely superseded by machinery.

Knolles (nōls), or KNOWLES, RICHARD, an English historian, born about 1543; died in 1610. He was educated at Oxford, and became master of the free school of Sandwich, in Kent. He wrote a *General History of the Turks* (published in 1603 and 1610), the style of which is highly commended by Johnson, Hallam and other critics, and *Lives and Conquests of the Ottoman Kings and Emperors,* continued to and printed in 1621.

Knot (not), a complication of a thread, cord, or rope, or of two or more threads, cords, or ropes by tying, knitting, or entangling. Knots expressly made as means of fastening differ as to form, size and name according to their uses, as overhand-knot, reef-knot, half-hitch, close-hitch, timber-hitch, fisherman's-bend, carrick-bend, sheet-bend, single-wall knot, double-wall knot, etc. The term knot is also applied on shipboard to a division of the log-line which is the same fraction of a mile as half a minute is of an hour; that is, it is the hundred and twentieth part of a nautical mile; hence, the number of knots run off the reel in half a minute shows the vessel's speed per hour in miles, so that when a ship goes 8 miles an hour, she is said to go 8 *knots.* Hence, the word has come to mean also a nautical mile or 6086.7 feet.

Knot, a grallatorial bird of the family Scolopacidæ and genus *Tringa* (*T. canūtus*), closely allied to the snipe.

Knotgrass, a very common weed of the genus *Polygŏnum* (*P. aviculāre*), remarkable for its wide distribution. It is of low growth, with branched, trailing stems, and knotted joints (whence the name).

Knout (nout), a kind of whip or scourge serving as an instrument of punishment in Russia. It was formerly in use in the army, but a few strokes only are now inflicted, as a disgrace, in case of dismissal. It is still sometimes used for criminals. The nobles were exempted from the knout, but the exemption was not always observed.

Knowles (nōlz), JAMES SHERIDAN, dramatist, born at Cork in 1784; died at Torquay in 1862. He took to the stage in 1798, but meeting with

indifferent success, he devoted himself to teaching, first in Belfast, and afterwards in Glasgow. His tragedy of *Caius Gracchus* was performed in 1815 with success, and from this time he had a prosperous career as author, actor and lecturer. About 1845 he retired from the stage. He became afterwards a Baptist preacher, and published several theological works. In 1849 he received a pension of £200 a year from the government. The following are among his principal works;—*Caius Gracchus, Virginius, William Tell, The Hunchback, The Wife of Mantua, The Love-chase*, and in 1847 and 1849 he published two novels, *Fortescue* and *George Lovell*.

Knox (noks), JOHN, the chief promoter of the reformation in Scotland, was born at Gifford, in East Lothian, in 1505; died at Edinburgh in 1572. He was educated at the grammar school of Haddington, and at either Glasgow or St. Andrews, and had Dr. John Mair or Major as his philosophical and theological teacher, but did not take the degree of master of arts. He became a secular priest about 1530, and spent about 10 years in a religious establishment in East Lothian. He became an avowed advocate of the reformed faith about 1542, and entered the family of Douglas of Longniddrie as tutor to his sons and those of the laird of Ormiston. In 1546-47 he preached to the beleaguered Protestants in the castle of St. Andrews, and when it was taken by the French, Knox was sent to France with the other prisoners, and put to the galleys, from which he was released in 1549. He passed over to England, and, arriving in London, was licensed either by Cranmer or the Protector Somerset, and appointed preacher, first at Berwick, and afterwards at Newcastle. In 1551 he was appointed chaplain to Edward VI, and preached before the king at Westminster, who recommended Cranmer to give him the living of Allhallows, in London, which Knox declined, not choosing to conform to the English liturgy. It is said that he also refused a bishopric. On the accession of Mary, in 1554, he quitted England, and sought refuge at Geneva, where he had not long resided before he was invited by the English congregation of refugees at Frankfort-on-the-Main to become their minister. A dispute concerning the use of a church service sent him back to Geneva, whence after a residence of a few months, he ventured, in 1555, to pay a short visit to his native country. He again retired to Geneva, where he wrote several controversial and other works, including the *First Blast of the Trumpet against the Monstrous Regimen of Women*, chiefly aimed at the cruel government of Queen Mary of England, and at the attempt of the queen regent of Scotland to rule without a Parliament. A *Second Blast* was to have followed; but the accession of Queen Elizabeth to the throne of England, who was expected to be friendly to the Protestant cause, prevented it. In May, 1559, he returned to Scotland, and immediately joined the Lords of the Congregation. He preached at Perth on the occasion when the inflamed multitude made a general attack on the churches of the city, the altars being overturned, the pictures destroyed, the images broken, and the monasteries almost leveled to the ground. Similar vandalism took place in many other places, but these proceedings were censured by the reformed preachers and by the leaders of the party. Being appointed minister of Edinburgh, he took a prominent part in the proceedings of the Protestant leaders from this time onward, and had the principal share of the work in drawing up the *Confession of Faith*, which was accepted in 1560 by the parliament. In 1561 the unfortunate Mary arrived in Scotland. She immediately began the regular celebration of mass in the royal chapel, which, being much frequented, excited the zeal of Knox, who openly declared from the pulpit, 'that one mass was more frightful to him than 10,000 armed enemies landed in any part of the realm.' This freedom gave great offense, and the queen had long and angry conferences with him on that and other occasions. He preached with equal openness against the marriage of Mary and Darnley, giving so much offense that he was called before the council and inhibited from preaching. In the year 1567 he preached a sermon at the coronation of James VI, when Mary had been dethroned and Murray appointed regent. After the death of Murray, in 1569, Knox retired for a time to St. Andrews. In 1572 he was greatly offended with a convention of ministers at Leith for permitting the titles of archbishop and bishop to remain during the king's minority. At this time his constitution was quite broken, and he received an additional shock by the news of the massacre of St. Bartholomew. He had, however, strength enough to preach against it, but soon after took to his bed and died. He was twice married, first to Marjory Bowes in 1555, and secondly, in 1564, to Margaret Stewart, daughter of Lord Ochiltree. In addition to numerous polemical tracts, letters and sermons, Knox wrote a *History of the Reformation of Religion*

within the Realm of Scotland. The best edition of his works is that edited by David Laing (1846–64); the standard biography is McCrie's *Life of Knox.*

Knox, Philander Chase, an American lawyer and statesman, born at Brownsville, Pennsylvania, in 1853; was admitted to the bar in 1875, and in 1876–77 was made assistant U. S. district attorney for the western district of Pennsylvania. Resigning this position he continued in law practice until 1901, when he was appointed attorney general of the United States. In 1904 he was elected U. S. senator from Pennsylvania and in 1909 became secretary of state in President Taft's cabinet.

Knoxville (noks'vil), a city, capital of Knox County, Tennessee, an important commercial and manufacturing center on the Tennessee River, 165 miles east of Nashville. It contains the State University, the Knoxville College (colored), the State Deaf and Dumb School and the Medical Department of the Lincoln Memorial University. It is in a coal, iron, zinc and marble mining region and has extensive industries, including iron and zinc works, cotton and flour mills, and packing houses. Knoxville was first settled in 1787 and incorporated as a city in 1817. Pop. 38,000.

Knoxville, a borough of Allegheny County, Pennsylvania, on the Cowanesque Creek, 60 miles N. of Lock Haven. It has large flour mills and tobacco warehouses, creamery and cheese factories, etc. Pop. 5651.

Koala (ko-ä'la), the native name for a marsupial animal of Australia, commonly referred to the family Phalangistidæ or phalangers. It somewhat resembles a small bear, hence its scientific name, *Phascolarctos cinereus* (*Gr. phaskos*, a pouch, and *arktos*, a bear). It is a very gentle animal and will often suffer itself to be captured without offering much resistance and manifests little concern about its captivity. It is, however, subject to unexpected gusts of passion and when it is excited by rage it assumes a very fierce look and gives vent to yells that are sharp and shrill. It has been recognized as the link between the phalangers and the kangaroos. It is nocturnal in its habits and is not easily found, even in the localities which it most affects. It is not known to exist in a wild state outside of the south-eastern regions of Australia. On account of its tree-climbing habits it is sometimes called the Australian monkey as well as Australian bear. Its fur is of fine grey. Its forefeet have five toes, two of them opposed to the other three. The peculiarity does not extend to the hind limbs. The koala lives much on trees, feeding on the leaves, and often burrowing for roots. It is known by the names of 'native sloth' and 'native bear.'

Kobé, Kobbé, Kobbeh (kō'bā), a chief trading town of Darfur, Central Africa, situated on the main caravan route. Pop. 6000.

Kobé, a seaport of Japan, adjoining Hiogo so closely as to form one town with it. It is of more recent origin than Hiogo, and is strictly the port opened by treaty to foreign commerce. Combined pop. 378,197.

Kobold (kō'bold), a species of elf in the popular superstition of Germany, corresponding to the English *goblin*, and the Scottish *brownie*. The kobold is connected with a house or a family, and appears in bodily shape. Though inclined to mischievous teasing, they do on the whole more good than evil to men, except when irritated. They frequent mines as well as houses, and the metal *cobalt* has its name from this spirit.

Kobrin (kob'rēn), a Russian town, government of Grodno, formerly the capital of a principality of the same name. Pop. 10,355.

Koch (kok), Robert, an eminent bacteriologist, born at Klausthal, Germany, in 1843. His reputation rests chiefly on his discovery of the bacterial germs of cholera and tuberculosis and his production of tuberculin, a remedy for the latter disease the efficiency of which has not been fully established. He was professor at Berlin in 1885, director of the institute for infectious diseases in 1891, and in 1896 went to South Africa to study the cattle disease. He died in 1910.

Kock, Charles Paul de, a French novelist, born in 1794; died in 1871. His novels dealt with scenes of low life in Paris and were long very popular.

Kodak (kō'dak), a form of camera adapted to take instantaneous photographs by the 'snap-shot' method. It has the shape of a small box, with a lens and shutter on one side and a reflector on top. When the operator sees the view he wishes in the reflector, he presses a button and an instantaneous negative is taken automatically.

Ko'diak. See *Kadiak.*

Koel. See *Aligarh.*

Kohat (kō-hät'), a town of India, headquarters of district of the same name in the lieutenant-governorship of the Punjab. Pop. including

suburbs and cantonments, 30,762. The district has an area of 2838 square miles. There are rich deposits of rock salt, some petroleum springs and sulphur mines. Pop. 217,805.

Koheleth, COHELETH. See *Ecclesiastes.*

Koh-i-noor. See *Diamond.*

Kohler (kō'ler), KAUFMANN, a German-American theologian, born at Furth, Germany, 1843; came to the United States to accept the post of rabbi of the Beth El congregation, Detroit, Mich., 1869. He was minister of the Sinai Temple, Chicago, Ill. 1870–79), and of Temple El, New York (1879–1903). In 1903 he was made honorable minister for life to enable him to accept the presidency of the Hebrew Union College, Cincinnati. He was one of the editors of the Jewish Encyclopedia. His publications include *On Capital Punishment according to Jewish Law* (1869), *Jewish Ethics, Church and Synagogue in their Mutual Relations, Lectures on Reform Judaism* (1885), and *Principles of Jewish Theology upon a Historical Basis* (1910).

Kohlrabi (kōl'rä-bi), a cultivated variety of the cabbage, distinguished by a swelling at the neck of the root, which is valuable as food.

Kokomo (kō'kō-mō), a city, county seat of Howard County, Indiana, 54 miles north of Indianapolis. Its products include glass, automobiles, sanitary potteries, wire fencing, nails, fence stays, stoves, ranges, furnaces, bicycle tires, auger bits, chisels, brass and aluminum castings, automobile accessories, handles, trunks, etc. Pop. 22,050.

Kokra Wood (ko'kra), the wood of *Aporosa* or *Lepidostachys Roxburghii*, a tree of the Spudgewort family (Euphorbiaceæ), a native of India, used for musical instruments.

Kola (kō'la), a seaport of Russia, in the government of Archangel, on the Kola, near its mouth in the Bay of Kola; the most northern town in European Russia. Pop. 600.

Kola, COLA (kō'la), a genus of plants belonging to the natural order Sterculiaceæ, a native of western tropical Africa. The *Kola* or *Sterculia acuminata* produces a fruit which consists of two, sometimes more, separate pods containing several seeds about the size of horse chestnuts. The seeds have been found to contain caffeine, the active principle of coffee, as also the same active principle as cocoa, with less fatty matter. A drink prepared from them is largely used in tropical Africa, and is said to have digestive, refreshing and invigorating properties. The tree has been introduced into the West Indies and Brazil. The negroes of Jamaica are said to get rid quickly of the effects of intoxication by using the kolanut. It has been introduced into Britain, manufactured into a paste, or into tablets, and is used as a tonic, but has only an effect like that of coffee or caffeine.

Kolaba (kō-lä'ba), a British Indian district in the southern division of the Bombay Presidency, stretching along the coast southward from Bombay harbor for 75 miles; area, 1872 square miles; pop. 605,566.

Kolapoor. See *Kolhapur.*

Kolar (kō-lär'), a district of the native state of Mysore, Southern India; area, 3059 square miles; pop. 723,600. The chief town, also called KOLAR, is situated 43 miles E. N. E. of Bangalore. Pop. 12,210.

Kolding (kōl'ding), a seaport of Denmark, east coast of Jutland, on the Koldingfjord, an inlet of the Little Belt. Pop. 12,516.

Kolhapur (kol-hä-pōr'), a native Indian state, Bombay Presidency; area, 2816 sq. miles; pop. 910,011. —KOLHAPUR, the chief town, is a picturesque, thriving place, held in high esteem for the antiquity of its sacred shrines. Pop. 54,373.

Kolima. See *Kolyma.*

Kollin, or KOLIN (kō'lēn), a town of Bohemia, on the Elbe, 35 miles east by south of Prague. It has manufactures of sugar, chemicals, etc. Frederick the Great was defeated here by Marshal Daun, June 18, 1757. Pop. 15,025.

Köln. See *Cologne.*

Kolomea (kō-lō-mä'a), a town of Austria, in Galicia, 108 miles S. S. E. Lemberg, on the right bank of the Pruth. Petroleum refining, pottery, etc., occupy the inhabitants. Pop. 34,188.

Kolomna (ka-lom'na), a town of Russia, in the government of and 60 miles southeast of Moscow. It has manufactures of woolen, linen, soap, etc., and an important trade. Pop. 20,970.

Kolyma (ka-li-mä'), a river of Eastern Siberia, which rises in the Stanovoi Mountains, and after a course of nearly 1000 miles falls into the Polar Sea.

Komorn (kō-morn'), the capital of the county of Komorn, in

Hungary, at the confluence of the Danube and Waag, with some manufactures and a considerable trade. There is here a very strong fortress which has been repeatedly besieged. During the Hungarian insurrection of 1848-49 it was besieged by the Austrians in vain, but was surrendered by capitulation. Pop. 20,264.

Komura, JUTARO, Baron, a Japanese statesman, was born in 1858. He studied at Harvard Law School and became a judge in Japan. In 1902, as Foreign Minister, he effected the Anglo-Japanese alliance. In 1905 he was the chief Japanese plenipotentiary in the Russo-Japanese Peace Convention at Portsmouth, New Hampshire. Died in 1911.

Kong, a district of W. Africa, stretching from 8° 30′ to 12° N. lat. Trade in cloth and gold. This district was declared a protectorate of France in 1889, and now constitutes a part of the French Ivory Coast, in the 'territory' of French West Africa. Pop. about 15,000.

Kongju, a town, Korea, 35 miles E. by S. of Chemulpo. Pop. 36,000.

Kongmun, a town, China, in Kwangtung province, 40 miles S. S. W. of Canton. Pop. 62,000.

Konia (kō'nē-ä), or KONIEH (ancient *Iconium*), a town of Asiatic Turkey, capital of vilayet of same name. The inhabitants are chiefly employed in making stockings and gloves. Pop. about 60,000.

Königgrätz (keu'niä-grätz), a town of Bohemia, on the left bank of the Elbe, at the confluence of the Adler, 64 miles E. N. E. of Prague. It is the see of a bishop, and contains an ancient cathedral. The battle of Sadowa was fought in the vicinity on July 3, 1866. Pop. 9773.

Königinhof (keu'ni-gin-höf), a town of Bohemia, 14 miles N. N. W. of Königgrätz, on the Elbe. Pop. 11,000.

Königsberg (keu'niäs-berk), a fortified seaport town of Prussia, capital of the province of East Prussia, on the Pregel, about 4 miles above where it enters the Frisches-Haff. It consists of three main parts—the *Altstadt*, or Old Town, situated on the west; *Löbenicht* on the east (both north of the Pregel), and *Kneiphof*, situated on an island formed by the Pregel, besides extensive suburbs south of the Pregel. Between the Altstadt and Löbenich is the Schlossteich, a fine sheet of water. The principal buildings are the cathedral, a Gothic structure, begun in 1333, restored in 1862, situated in the Kneiphof; the schloss, or palace, begun in 1255, formerly the residence of the grand-masters of the Teutonic order, and now containing apartments for the royal family, government offices, etc.; the schlosskirche, or palace church, occupying a wing of the palace; the new university, completed in 1862; the old university; the exchange, a fine modern building; the city museum, theater, etc. The university, founded in 1544 by the Margrave Alber, is attended by 800 to 900 students, and has connected with it a library of 220,000 vols., a zoological museum, and other valuable collections. The manufactures of Königsberg are various. The chief trade is in grain, flax and hemp, timber, tea, etc. Owing to shallow water the larger vessels bound for Königsberg land at Pillau, which is accordingly considered its port. The fortifications surround the city on all sides, and are now very strong. Königsberg entered the Hanse League in 1365. It suffered much during the Seven Years' war by the occupation of the Russians from 1758 to 1764, and much more severely from the French, who entered it in 1807, after the battle of Friedland, and laid it under heavy contribution. Pop. 245,853.

Königsberg, a town of Prussia, province of Brandenburg, 41 miles north of Frankfort-on-the-Oder. Pop. 5958.

Königshütte (keu'niäs-hüt-ä), a town of Prussia, province of Silesia, 49 miles E. S. E. of Oppeln. The inhabitants are chiefly employed in iron-working and mining, coal and iron being raised in large quantities, and also zinc. Pop. (1910) 72,640.

Königsmark (keu'niäs-märk), MARIA AURORA, COUNTESS, born at Bremen in 1670; died in 1728. She was celebrated for her beauty and mental accomplishments; became the mistress of Frederick Augustus, elector of Saxony and king of Poland, and mother of Maurice of Saxony (Marshal Saxe), the celebrated French general. She was extravagantly esteemed by Voltaire.

Konrad. See *Conrad*.

Koodoo (kō'dō; native name), the striped antelope (*Antilope strepsiceros*, or *Strepsiceros koodoo*), a native of South Africa, the male of which is distinguished by its fine horns, which are nearly 4 feet long, and beautifully twisted in a wide spiral. The koodoo is of a grayish-brown color, with a narrow white stripe along the back, and eight or ten similar stripes proceeding from it down either side. It is about 4 feet in height, and fully 8 in length.

Kookas (kō'kăz), a nigritic tribe of the central Soudan, east of Lake Chad.

Koom. See *Kum.*

Koordistan. See *Kurdistan.*

Kooria Mooria Islands, a group of five islands on the southeastern coast of Arabia, belonging to Great Britain. There was formerly a considerable deposit of guano on the largest island, but it was not of very good quality. It is now exhausted.

Kopek. See *Copeck.*

Koran (kō'ran; *Al-Korán*, that is the *Koran*, which means originally 'the reading, or that which is to be read'), the book containing the religious and moral code of the Mohammedans, and by which, indeed, all their transactions, civil, legal, military, etc., are regulated. According to the Mohammedan belief, it was written from the beginning in golden rays on a gigantic tablet in the highest heavens, and portions were communicated by the angel Gabriel to Mohammed at intervals during twenty-three years. These were dictated by Mohammed to a scribe and kept for the use of his followers. After Mohammed's death they were collected into a volume, at the command of Mohammed's father-in-law and successor, Abu Bekr. This form of the Koran, however, was considered to contain erroneous readings, and in order to remove these Caliph Othman caused a new copy to be made from the original fragments in the thirtieth year of the Hejra (625 A.D.), and then ordered all the old copies to be destroyed. The leading doctrine of the Koran is the Oneness of God, clearly laid down in the symbol of the Moslem—'God is God, and Mohammed is his prophet.' To Christ it assigns a place in the seventh or highest heaven, in the immediate presence of God, but he is simply regarded as one of the prophets—Adam, Noah, Abraham, Moses, Jesus and Mohammed. The doctrines of good and bad angels, and of the resurrection and final judgment, are fully set forth, as is also God's mercy, which secures entrance into heaven and not the merits or good works of a man. The joys of heaven range from music and women to the supreme joy of beholding God's face, while the pains of hell are depicted in vivid colors. Idolatry and the deification of created beings are severely condemned. Another dogma is set forth in the Koran, yet not explicitly, that of the unchangeable decrees of God. Mohammed used the doctrine of predestination with great success to infuse into his adherents undaunted courage, which elevated them above all perils. The Koran prescribes prayer, fasting, alms, and the pilgrimage to Mecca and Mount Arafat. The great fast is that of Ramadan (which see). He prescribed prayer five times a day with the face turned towards Mecca. Purification must precede prayer, and where water is unattainable dry dust or sand may be used. To give alms was always a particular trait of the Arabians, but Mohammed made it obligatory. The pilgrimage or something similar had existed with most sects before him. In respect to the civil laws relating to polygamy, divorce, inheritance, etc., Mohammed followed step for step the laws of Moses and the decisions of the rabbis, only adapting them to the customs and prejudices of his countrymen. The Koran is written in prose, but the different parts of a sentence end in rhymes. In size it is about equal to the New Testament; it is divided into 114 *surahs* or chapters of unequal length, each of which begins with the phrase, 'In the name of God.' As the work was written at different times, in different moods, and on different occasions, there is naturally great diversity in the style of different passages. The language is considered the purest Arabic. It is, however, very different from the spoken Arabic of modern times. Commentaries on the Koran are exceedingly numerous.

Kordofan (kor-dō-făn'), a country of Africa, in the Eastern Soudan between Darfur and the Nile. From 1821 to 1883 it formed one of the Soudanese provinces of Egypt, but at the latter date it was freed from Egyptian rule through the Mahdi's insurrection, and has since been virtually independent. The surface is generally flat and the soil naturally fertile. The climate in the wet season, lasting from June to October, is extremely unhealthy; in the dry season, though healthy, it is intolerably hot. The principal articles of trade are gum, hides, senna, ivory, cattle, gold, salt, slaves, etc. Cultivation is almost wholly confined to duchn, a species of millet. The inhabitants consist of negroes, Arabs, etc. Pop. estimated at 550,000. The chief town is El Obeid. Pop. about 10,000.

Korea. See *Corea.*

Kornegallé (kor-nā-gäl'le), a town of Ceylon, 55 miles N. E. of Colombo. It was formerly a capital, and has an ancient temple, a great resort for Buddhist pilgrims, on account of a footprint of Buddha being hollowed in the rock. Pop. 4000.

Körner (keur'nĕr), KARL THEODOR, a German poet, born at Dresden in 1791; killed in 1813. He wrote the tragedies of *Rosemunde* and *Zriny*, and a large number of dramas for the Theater Royal at Vienna, but owes his fame to his celebrated patriotic lyrics, which are all national in Germany. In 1813, when Germany took up arms against Napoleon, Körner joined the famous Lützow corps of black hussars, and was fatally wounded in a skirmish fought in the neighborhood of Gadebusch, in Mecklenburg-Schwerin. The collection of songs published soon after his death as *Leier und Schwert* ('Lyre and Sword') contains some of the finest war-songs in any language.

Körös (keu'reush), NAGY (nâdy), a town in Hungary, 47 miles southeast of Budapest. It contains a number of handsome buildings, and has a considerable trade in wool and cattle. Pop. 26,512.

Korvei. See *Corvey*.

Korolenko (kŏr-ō-len'kō), VLADIMIR, a Russian novelist and publicist, born in 1853. He began his career at the age of thirty, while in exile as a political criminal at Yakutsk, Siberia; and on his return soon gained the admiration and respect of the Russian people. His works include *The Dream of Makara*, *Bad Company*, etc.

Kosciusko (kos-si-us'ko, or kosh-tsyush'kō), THADDEUS, Polish patriot, was born in Lithuania of an ancient and noble family in 1746, and died at Soleure in 1817. He was educated in the military school at Warsaw, and was afterwards sent at the expense of the state to complete his studies in France. On his return to Poland he became tutor to the daughter of Gasnovski, marshal of Lithuania, but left his native country and betook himself to America (1776), where he attracted the notice of Washington, was appointed by him engineer, with the rank of colonel, and afterwards general of brigade. He did not return to Europe till three years after the conclusion of the Peace of 1783. In 1794 he was appointed generalissimo of the insurgent forces. He defeated the Russians at Raclavice, near Cracow, but at the battle of Maciejovice his army was defeated and he himself wounded and taken prisoner. He was liberated on the accession of Paul I of Russia in 1796. After visiting England and America, he ultimately settled at Soleure in Switzerland. In 1817 he issued from here a letter of emancipation to the serfs on his estate in Poland. In 1818 his body was removed at the expense of the Emperor Alexander of Russia to Cracow, where it was buried in the cathedral, and where a monument was erected to him. A mound 150 feet in height, formed of earth from all the principal battlefields of Poland, was also raised to his memory in the vicinity of Cracow.

Kosciusko, MOUNT, one of the highest mountain peaks in Australia, in the Muniong Alps, in New South Wales, near the frontier of Victoria; 7308 feet high.

Kosel (kō'zel), a fortified town of Prussia, province of Silesia, on the Oder. Pop. 7087.

Kosher (ko'sher; Hebrew, *clean*, *right* or *fit*), the Jewish term for any food that is made ritually fit for use, in contradistinction to *pasul*, unfit and *terefah*, forbidden. The special application of the term, however, is to meat slaughtered in accordance with the law of Moses. The *schochat* or butcher must be a devout Jew, of high moral character, duly licensed by the chief rabbi. The main object is to insure the complete bleeding of the body, since the Jews are forbidden to eat blood.

Köslin (keus'lin), a town in Prussia, province of Pomerania, 4 miles from the Baltic, and 85 miles northeast of Stettin. It has manufactures of paper, soap, etc. Pop. 21,474.

Koslov (kaz-lof'), or KOZLOV, a town in Russia, in the government of Tambov, and 52 miles W. S. W. of the town of Tambov. It has a considerable trade in cattle, and manufactories of woolens, linens. Pop. (1912) 50,225.

Kossuth (kosh'shut), LAJOS (LOUIS), Hungarian patriot, born at Monok in the county of Zemplin, Hungary, in 1802. He studied law, and in 1832 entered the Presburg Parliament. For persisting in publishing the debates of the diet, he was condemned to four years' imprisonment. In 1841 he became editor of the *Pesth Journal*, and in 1844 he founded a national league in opposition to the Viennese government. In 1847 he was elected to the diet by the national party, and secured the appointment of a responsible Hungarian ministry, in which he became minister of finance. During the Hungarian war for liberty he was chosen governor or dictator, but the intervention of Russia rendered all the efforts of the Hungarians unavailing. Kossuth resigned, was succeeded by Görgey whom he accused of treachery, and was interned in Turkey. He was released through the intervention of Britain and the United States; visited these countries and met with an enthusiastic reception. He was long regarded as the leader of the Irreconcilable party, but in 1884 he became

reconciled to the Hapsburg rule. His chief residence was in his later years in Italy. He died in 1894.

Kostroma (kŏs-trŏ-mä'), an inland government of Russia, area, 82,480 square miles. The surface consists of wide level plains, occasionally varied by general acclivities. Hemp and flax are largely grown, and the industries include the manufacture of silver and copper wares, leather, chemicals, etc. The forests are extensive. Pop. 1,596,700.—KOSTROMA, the capital, stands on a height near the confluence of the Kostroma with the left bank of the Volga, 56 miles east of Jaroslav. It is an ancient place, and has a fine old cathedral situated in the Kremlin or former citadel. Pop. 41,268.

Kotah (kō'tä), an Indian native state in Rajputāna, under the political superintendence of a British agent. Area, 3777 square miles; pop. 544,879.—KOTAH, the chief town, is situated on the river Chambal, and has a pop. of 33,679.

Köthen. See *Coethen.*

Koti, a river and Dutch settlement on the east coast of Borneo.

Kottbus (kot'bŏs), a town in Prussia, provice of Brandenburg and government of Frankfurt, on the Spree, 65 miles S. E. of Berlin. It is a busy manufacturing town. The chief manufactures are woolen cloth and yarns, linen, hosiery, tobaccos, toys and carpets. There are also distilleries and breweries. Pop. 46,269.

Kotow (ko'tou), the ceremony of prostration and striking the forehead nine times on the ground, performed before the Emperor of China. Lord Amherst, in 1816, was the first envoy who refused to perform this ceremony, and the point then made was conceded by the Chinese in the treaty of 1856.

Kotzebue (kot'se-bō), AUGUST FRIEDRICH VON, a prolific German dramatist and miscellaneous writer, born at Weimar in 1761; assassinated at Mannheim in 1819. In 1781 he went to St. Petersburg, where, obtaining the patronage of the empress, he was made governor of Esthonia and ennobled. About 1800 he returned to Germany, and attacked Goethe and other great German authors who had refused to associate with him. In 1806 he went again to Russia, and lived from 1807 on his estate Schwartze, in Esthonia. In 1813, as counselor of state, he followed the Russian headquarters, constantly writing to excite the nations against Napoleon. In 1817 he received a salary of 15,000 roubles, with directions to reside in Germany, and to report upon literature and public opinion. Kotzebue, who during the whole campaign had written in favor of the Russians, even at the expense of his native country, and had expressed the utmost contempt for liberal principles and institutions, was now odious in the eyes of most of his countrymen, and regarded as a spy. This feeling was so strong in the case of a young enthusiast named Sand that he assassinated him as a traitor to liberty. He wrote more than 100 plays, a history of Germany and other works, most of which are now forgotten. Two of his plays, *The Stranger* and *Pizarro*, are well known on the recent stage.—His son, OTTO, born in 1787; died in 1846, made three voyages round the world, and discovered several islands in the Pacific.

Kouba. See *Kuba.*

Koumiss (kō'mis), or KUMISS, a preparation of milk, whether cow's, mare's, ass's, goat's, which is said to possess wonderful nutritive and assimilable properties. It consists essentially of milk in which alcoholic fermentation has been developed. On the Asiatic steppes, where it has been long used as a beverage, it is made of mare's milk; but koumiss of mare's milk or goat's milk has a somewhat unpleasant smell.

Koursk. See *Kursk.*

Koussa, Kosso. See *Cusso.*

Kovno (kov'nō), a town in Russian Poland, in the government of the same name, of which it is the capital, 52 miles W. N. W. Vilna, on the left bank of the Niemen or Memel. The population, a great part of which consists of Jews, is 87,986.—The government has an area of 15,602 square miles, and its population is 1,683,600.

Kowloon. See *Cowloon.*

Kraal (krâl), a South African native village or town, usually a collection of huts surrounded by a palisade. Sometimes the term is applied to a single hut.

Kraguyevatz (krä-gō-yä'vats), a town of Servia, on the Lepenitza, with a cannon and small arms factory, powder-mill and arsenal. Pop. 14,160.

Krakatoa (krä-kä-tō'a), a small uninhabited volcanic island situated in the Sunda Straits, about equally distant from Java and Sumatra. Previous to the eruption of 1883 it measured 5 miles in length and 3 in breadth, and culminated in two elevations, the highest of which was known as the Peak

of Krakatoa, and rose to a height of some 2750 feet above the sea-level. Krakatoa was the scene of an eruption in 1680, but since that time its history was uneventful till the disastrous eruption of 1883. In May of that year intimations of volcanic activity were observed, and on August 27th a gigantic explosion took place which actually blew away a large part of the mountain, and entirely altered the physical features of the island and the neighboring coasts. An immense wave swept over the shores of the neighboring islands occasioning a loss of life variously estimated at from 15,000 to 50,000. To the north two new islands appeared where the morning previous there had been from 30 to 40 fathoms of water. An interesting result was the fact that for several years afterwards remarkably red sunsets were common in the United States, ascribed to volcanic dust from Krakatoa, which had spread in the upper atmosphere around the earth.

Kraken (krä'kn), the term, of Norwegian origin, applied to a fabulous sea-monster, generally assumed to be a gigantic Cephalopod or cuttle-fish. It was first described by Pontopiddan, bishop of Bergen in Norway, but other old writers have accounts of substantially the same kind of monster. It is described as of enormous size; rising from the sea like an island about 1½ miles in circumference, with enormous mast-like arms with which it wrecked ships, created whirlpools, and realized all that was prodigious and strange in size, habits and appearance. The kraken stories are much akin to the modern accounts of the great sea-serpent. Naturalists are chary of accepting any but trustworthy evidence, yet recent researches and discoveries would seem to indicate that very large members of the cuttle-fish group do certainly exist, and that, from analogy, largely-developed forms of other marine classes may occasionally be found.

Kranach, LUCAS. See *Cranach.*

Krapotkine. See *Kropotkine.*

Krasnoiarsk (kräs-nä-yärsk'), 'the Town on the Red Cliff'), a town in Siberia, capital of the government of Yeniseisk, at the junction of the Yenissei and Katcha. Manufactures of leather, etc., are carried on by artisan convicts, and there are also some gold-washings in the neighborhood. Pop. 27,300.

Krasnovodsk (kräs-nä-vädsk'). Russian fortress on the eastern shore of the Caspian Sea, lat. 40° N. It has been the starting-point of many important scientific and military expeditions to Central Asia.

Krause (krou'ze), KARL CHRISTIAN FRIEDRICH, a German philosopher, born at Eisenberg in 1781; died in 1832. He lectured at Berlin and Göttingen. Krause is deservedly ranked with Fichte, Schelling, Hegel, Herbart, and Schopenhauer, as one of the masters of the German philosophical movement which was inaugurated by Kant.

Krayova (kra-yō'va), a town in Roumania, situated near the Schyl, capital of the administrative district of Dolshi. It has an active trade, particularly in salt from mines in the vicinity. Pop. 40,000.

Kreasote. See *Creasote.*

Krefeld (krä'felt), a town in Rhenish Prussia, 12 miles northwest of Düsseldorf. It is the principal locality in Prussia for the manufacture of silks and velvets. There are also manufactories of soap, chemicals, sugar, etc. Pop. (1910) 129,412.

Kreisler (kris'ler), FRITZ, an Austrian violinist, born at Vienna, Feb. 2, 1875. He entered the Vienna Conservatory at seven years of age, winning the first prize three years later, and that at the Paris Conservatory in 1887. He toured in America with Rosenthal, 1880–90, and on returning to Europe studied medicine and art, and entered the army. Resuming his musical studies, he appeared in Berlin in 1899 with success. He has since revisited this country.

Krementchug (krem-en-chōk'), a town in Russia, government of Poltava, 67 miles southwest of the town of Poltava, on the Dnieper. It has a considerable trade in wool, tobacco, candles, and timber. Pop. 63,000.

Kremlin (krem'lin; Russian, *kreml*), a fortress, in Russia the citadel of a town or city; specifically applied to the ancient citadel of Moscow. See *Moscow.*

Kremnitz (krem'nitz), a town in northwestern Hungary, with silver mines in the vicinity. Pop. 10,000.

Kremsier (krem'sēr), an Austrian town, province of Moravia, on the March, 25 miles S. by E. of Olmütz. Pop. (1911) 16,523.

Kreuznach (kroits'nAh), a town in Rhenish Prussia, on the Nahe, 28 miles southwest of Mayence, with valuable mineral springs. Pop. (1910) 28,198.

Kriegspiel (krēh'spēl; war-game), a game of German origin, played with maps on a large scale, and colored metal blocks, on the same scale

Holy Gate, Kremlin, Moscow.

as the map, representing bodies of troops of various strength (brigades of infantry, battalions of rifles, regiments of cavalry, besides artillery, engineers, pontoon troops, telegraph troops, etc.). The players are usually two on each side, and the game forms an exact miniature of tactical operations. It is played by alternate moves. Each move represents the lapse of two minutes, and rules are given to determine the distance that each branch of the service may move over in that time. When two bodies of men on opposite sides come into contact, the weaker in numbers and position is held to be defeated; but when they are equal in these respects victory is determined to one side or the other by the use of a die. The game is a favorite one in the German army, and has been adopted to a certain extent in that of Britain.

Kriloff (krē-lof'), or Krylow, Ivan Andreyevitch, a Russian fabulist, born at Moscow in 1758; died at St. Petersburg in 1844. His first compositions were dramas, which were not successful. In 1809 his first collection of fables was published, which, meeting with instant favor, have continued to be the delight of all ages and classes in Russia, many sentences in them having become popular proverbs. They have been translated into German, French, Italian and English. From 1812 to 1841 Kriloff held a post in the St. Petersburg Imperial Public Library.

Krimmitzschau (krim'mit-shou), a busy manufacturing town in Saxony, 37 miles south of Leipzig, on the Pleisse, with woolen spinning and weaving, etc. Pop. 22,840.

Kris (krēs), or Krees, the dagger or poniard forming the universal weapon of the inhabitants of the Malay Archipelago. There are many forms of it, short and long, with straight or serpentine blade, and with every variety in the shape and ornamentation of the hilt and scabbard.

Krishna (krish'na), in Hindu mythology, the eighth avatar of Vishnu and the most popular deity in the Hindu pantheon. He was ostensibly the son of Vasudeva and Devaki of the royal family of the Bhoja reigning at Mathura. The reigning prince at the time of his birth was Kansa, who, to prevent the fulfillment of a prophecy, sought to destroy the young child, but his parents, assisted by divine power, succeeded in baffling all his efforts. Every year of his life furnishes the subject of some legend, his

Krishna.

story showing a remarkable resemblance to those of the Greek Heracles and Apollo. After a series of amorous and heroic exploits, detailed at length in the Puranas, he slew Kansa, mounted the throne, and was at last killed by the arrow of a hunter, shooting unawares in a thicket.

Krishnagar (krish-nag'ar), a town of Hindustan, administrative headquarters of Nadiya district, Bengal, on the left bank of the Jalangi River. It has a college affiliated with the Calcutta University, a collegiate school, a considerable trade, and manufactures of colored clay figures. Pop. 24,547.

Kriss-Kringle, a corruption of German *Christ kindlein* (Christ child). It is another name for Santa Claus, or St. Nicholas, the good genius of Christmas, who has the credit of filling the children's stockings in that happy season.

Kronos. See *Cronus.*

Kronstadt. See *Cronstadt.*

Kroo, Kru, a native race of the W. coast of Africa, much employed in doing rough work on vessels trading on the Liberian coast. Their territory extends about 70 miles along the coast; they are a stout, brawny race and very industrious.

Kropotkine (kro-pot'kēn), PRINCE PETER ALEXEIEVITCH, a Russian anarchist, born at Moscow, in 1842. As attaché for Cossack affairs to the governor of Eastern Siberia he made numerous journeys in Siberia and Manchuria; was made secretary of the St. Petersburg Geographical Society, and wrote several esteemed scientific books. In 1871 he joined the International Society, and began working his revolutionary ideas in Russia. He was condemned to three years' imprisonment, but made his escape and took up residence in Switzerland. Here he founded his anarchist newspaper *La Révolté.* Expelled from Switzerland, he took refuge in France, and was, in 1883, condemned to five years' imprisonment for complicity in outrages at Lyons, but was pardoned in 1886, when he went to England. He is an eloquent speaker and fluent writer, and has contributed several important articles to the *Encyclopædia Britannica,* and to leading British periodicals. He is the author of *The State, its Part in History; In Russian and French Prisons, Paroles d'un Révolté,* etc.

Krossen (krōs'en); a town in Prussia, on the Oder, in the province of Brandenburg. Pop. 7367.

Kruger (krüg'er), STEPHEN JOHANNES PAULUS (1825-1904), a famous Boer statesman and president of the former South African Republic, known familiarly as 'Oom Paul,' born at Rastenburg, Cape Colony. At the age of eleven he left Cape Colony with his parents and accompanied them on the 'great trek' undertaken by the Boers who were discontented with British government in South Africa. This 'trek' resulted in the colonization of Natal, the Orange Free State and the Transvaal by the Boers. Young Kruger settled for a time with his parents in the Orange Free State, and later moved to the region north of the Vaal River. He early entered the military service, but matters of government engrossed him and he soon began to be a power in the councils of state. In 1877, when Britain annexed the Transvaal, he was vice-president under President Burgers. He took a leading part in the first Boer war with England, 1880-81. In 1883 he was elected president, and was re-elected in 1888, 1893 and 1898. He succeeded in gaining certain governmental concessions from Great Britain and in 1882 the British government authorized the renaming of the state as the South African Republic. All went well till the Witwatersrand gold deposits were discovered. The British South Africa Company clamored for annexation. Matters came to a climax with the Jameson raid (q. v.) in December, 1895. War was narrowly averted by the diplomacy of Kruger, but it was only a temporary lull. In 1899 the second Boer war (q. v.) began, and the might of England was hurled upon the small republic, eventually crushing it. Pretoria fell on June 5, 1900, and Kruger made his way to Europe. He settled in Holland and died there July 14, 1904.

Krupp (krup), ALFRED, a German engineer and iron manufacturer, born at Essen in 1812; died in 1887. He succeeded his father as proprietor of a small metal foundry at Essen, which he gradually developed to an enormous extent. He discovered a new method of casting steel in large masses, which he exhibited in 1851. This led him to the manufacture of heavy steel ordnance, and especially to the construction of heavy breech-loading guns of a type invented by himself, the first of these being produced in 1861. Great improvements were subsequently effected, and the size immensely increased. Though his name is popularly associated with the manufacture of these large guns, the extensive works at Essen turn out also immense quantities of gun-carriages, shot, boiler-plates, axles, wheels, rails, screw-shafts

for steamers, etc. He was frequently called the 'Cannon King.'

Krushite (krush'it), an abrading material consisting of chilled cast-metal shot, made in very small sizes, down to a fine powder. Being very hard and tough, it is used as a substitute for sand in the sand-blast and in tumbling barrels, also for sawing and polishing stone and in making diamond drills.

Krypton (krip'tun), a chemical element discovered in 1898 by Professors Ramsay and Travis, as a gas that rises from liquid air. It is of the helium series, density 22.5, and monatomic. It is one of the recently discovered rare atmospheric gases.

Kshatriya (shat'ri-ya), the second or military caste in the social system of the Brahmanical Hindus, the Brahmans being first and the Vaisya and Sudra the third and fourth. The natural duties of the Kshatriya are bravery, generosity, rectitude and noble conduct generally.

Kuba (kö'ba), a town in Russia, in the Caucasian government of Baku, district of Kuba, 47 miles S. S. E. Derbend. Pop. 15,346.

Kuban (kö-bän'), a Russian territory in the Caucasus, bordering on the sea of Azov and the Black Sea. Area, 36,370 sq. miles; pop. 2,275,400. The chief river is the Kuban, which rises in Circassia and falls, after a total course of about 400 miles, into the Black Sea at the Bay of Kuban.

Kubelik (kö'be-lik), JAN, Bohemian violinist, born near Prague, of humble parentage in 1880. From 1892 to 1898 he studied at the Conservatorium in Prague, and a successful appearance in Vienna in 1898 led to a tour in Italy. While in Rome he received the order of St. Gregory the Great and his first tour in the United States (1901–02) did much to establish his fame.

Kûblai Khan (köb'li-khän), a Mongol emperor and founder of the 20th Chinese dynasty, that of Yuen; was born in 1214; died in 1294. In 1259 he succeeded his brother as Grand Khan of the Mongols, and in 1260 he conquered the whole of Northern China, driving out the Kin dynasty. Nineteen years later he added to his empire Southern China. Kûblai thus became sole ruler of an empire extending over a large part of Asia, as well as over those parts of Europe that had belonged to the dominions of Ghenghis Khan. Marco Polo describes the splendor of his court and entertainments, his palaces and hunting expeditions, his revenues, his extraordinary paper currency his posts, etc. Kûblai Khan is the subject of a poetical fragment by Coleridge.

Kuch Behar. See *Cooch Behar.*

Kuching (ku-ching'), the capital of Sarawak, on Sarawak River, Borneo, and now known as Sarawak, contains the residence of the rajah and those of several European merchants. It has forts, barracks, a courthouse, prison, etc.; a considerable trade, and a pop. of about 30,000.

Kuenen (kü'nen), ABRAHAM, a Dutch Biblical scholar, was born at Haarlem in 1828. He became professor of Hebrew and the Old Testament at the University of Leyden in 1855. He published in 1861-65 *An Historical Inquiry into the Origin and Collection of the Books of the Old Testament*, which has exerted a decisive influence on Biblical scholars. He was also the author of *The Religion of Israel, The Prophets and Prophecy in Israel, Natural Religions and Universal Religions* (Hibbert Lecture), etc. He was one of the leaders of the reconstructive school of modern Biblical criticism. He died in 1891.

Kuen Lun (kwen-lön'), a mountain range of Central Asia, stretching over a space of about 1500 miles, and forming in its whole length the north frontier of Tibet, as the Himalaya does that of the south. Several of the summits reach an altitude of over 28,000 feet, and the numerous elevated branches which stretch towards the Indus form valleys down which immense glaciers descend.

Kufic Writing. See *Cufic.*

Kuhhorn (kö'horn), same as *Alpenhorn.*

Kuhn (kön), ADALBERT, a German philologist, born in 1812; died in 1881. He made important contributions to comparative philology, and is regarded as the founder of the science of comparative Indo-Germanic mythology. He edited for a number of years the valuable *Zeitschrift für Vergleichende Sprachforschung* ('Journal of Comparative Philology').

Kuka (kö'kä), or KUKAWA, a town in Western Africa, the capital of Bornou, about 20 miles west from the southwest shores of Lake Chad. Pop. (estimate), 60,000.

Ku-Klux Klan (kö-kluks-klan), a secret society of a sociopolitical nature, which arose after the American Civil war and was bitterly opposed to the reconstruction measures which the government enacted and to the position then occupied by the late slaves. Its membership at one time spread over

nearly all the States of the South, and committed many acts of violence, even murder and arson. Strong measures were taken for the suppression of the society in 1871, and it soon after died away.

Kulbarga. See *Gulbarga.*

Kuldja, or KULJA (kōl'jä), a city of Central Asia, in the Chinese territory Dzoungaria, on the right bank of the Ili River, an important caravan center. The district was taken possession of by the Russians in 1871, but retroceded to China in 1881. Pop. 12,500.

Kulm (kulm).—1. A town of Prussia, province of West Prussia, 33 miles southwest of Marienwerder, on the Vistula. It has manufactures of woolen cloth and a trade in cattle. Pop. 11,665. —2. A village in Bohemia, about 9 miles northeast of Teplitz, where, on the 29th and 30th August, 1813, a great battle was fought, in which the allies under Barclay de Tolly totally destroyed the French army under Vandamme.

Kum, or KOOM (köm), a town of Persia, 78 miles S. W. of Teheran, formerly a place of great magnificence, but destroyed by the Afghans in 1722. Pop. about 30,000.

Kumaon, or KUMAUN (kö-mä'ön), a British district of Northern India, in the Northwest Provinces, belonging to the Himalayas. Area, 6000 sq. miles; pop, 493,641. The district is generally mountainous, but has important and valuable tea plantations. The capital is Almora, and there are two hill stations, Naini-Tal and Ranikhet. It forms with the districts of Garhwal and Tarai the division or commissionership of Kumaon, which has an area of 13,703 sq. miles, and a pop. of 1,207,030.

Kúmpta. See *Coomptah.*

Kumquat (kum'kwat), a very small variety of orange-tree (*Citrus japonica*) growing not above 6 feet high, and whose fruit, of the size of a large gooseberry, is delicious and refreshing, having a sweet rind and an acid taste. It is a native of China and Japan, but has been introduced into America and Australia. In China it is preserved with sugar in jars, and forms an important export.

Kánch (könch), a town of India, in Jaláun district, N. W. Province. Pop. 13,139.

Kundus (kön-dös'), a portion of Northeastern Afghanistan, between the Amu Daria and the Hindu Kush.

Kunersdorf (kö'ners-dorf), a village in Prussia, in the province of Brandenburg, near Frankfurt-on-the-Oder, celebrated for the defeat of Frederick the Great by the combined Russian and Austrian forces in August, 1759.

Kungur (kön-gör'), a town of Russia, in government of Perm. Pop. 14,824.

Kunigundé (kö-ne-gön'de), SAINT, daughter of Siegfried of Luxembourg, married Henry of Bavaria, afterwards Henry II of Germany; died as a nun in 1031. Accused of adultery, she is said to have vindicated herself by walking over red-hot plowshares barefooted. She was canonized in 1200, her feast being March 3.

Kur, or KURA (kö'ra; ancient *Cyrus* or *Kûros*), a river of Western Asia, rises in the mountains W. of Kars, flows through the Russian governments of Tiflis, Elisabethpol and Baku, and falls into the Caspian Sea, after a course of between 500 and 600 miles. It has numerous tributaries, the principal of which is the Aras or Araxes.

Kurdistan (kur-di-stän'; 'Land of the Kurds'), an extensive territory of Western Asia. As it does not form a separate political division, its exact limits are not ascertained; but the eastern part of it forms the Persian provinces of Ardilan and Kermanshah, and the remainder, constituting the far larger portion, is in Turkey, where it forms the principal part of the pashalic of Van and a considerable part of that of Bagdad. It is a mountainous region, containing considerable forests of oak and other hard timber, and also numerous pastures, on which horned cattle, sheep and fine-haired goats are reared, and in the valleys many fertile districts yielding rice, cotton, flax, fruits and gallnuts. It is drained by the Tigris and the Euphrates and their tributaries. The Kurds, to whom the territory owes its name, are not confined within its limits, but are found in considerable numbers eastward in Khorasan and over the hilly region of Mesopotamia, as far west as Aleppo and the Taurus. They are a stout, dark race, well formed, with dark hair, small eyes, wide mouth and a fierce look. On their own mountains they live as shepherds, cultivators of the soil, and bandits. Their language is a dialect of Persian, now much mixed with Arabic and Syriac; their religion Sunnite Mohammedanism. The Kurds owe but slight allegiance to either Turkey or Persia, living in tribes under their own chiefs, who commonly exact duties on the merchandise which passes over their territory. Their numbers have been estimated at 1,800,000.

Kuriles (kū'rilz), a chain of islands in the North Pacific, extending southwest to northeast, from Japan to Kamchatka, and belonging to Japan; area, about 5000 sq. miles. The whole chain is of volcanic origin, and there are many active volcanoes, one of which is from 12,000 to 15,000 feet high.

Kurnal, KURNUL. See *Karnul.*

Kuroki (kö-rō'ki), COUNT ITEI, a Japanese general, born in Satsuma, 1844. He took an active part in the revolution in favor of the mikado, rose to the rank of general in 1894, and captured Weihaiwei from China in 1895. In the war of 1904-05 he made brilliant operations against the Russians at the Yalu, Liaoyang and Mukden.

Kuropatkin (kö-ro-pat'kin), ALEXEI NICHOLAVITCH, a Russian general, born in 1848. After a long service in Asia and Turkey, he was made commander-in-chief of the Russian army in 1897 and minister of war in 1898. He commanded in Manchuria in the war with Japan, but was dismissed from his command in March, 1905, as a result of the Russian disasters, for which, however, he was not responsible. He patriotically accepted a subordinate command under his successor.

Kuro Siwo, or JAPAN CURRENT, the Gulf Stream of the Pacific, is the offspring of the great equatorial current, flows past Formosa, Japan, the Kuriles, the Aleutian Islands, and thence bends southwards to California. It is much inferior to the Gulf Stream both in volume and high temperature.

Kurrachee (ko-rä'chē), or KARACHI, an important seaport of India, on the coast of Sind, Bombay Presidency, at the northern (or western) angle of the Indus delta, situated on a large and commodious creek or inlet, forming a good haven, perfectly safe in all winds, and out of the track of cyclones. The harbor is formed by a long narrow strip of sand on the west, ending with a rocky promontory called Manora Head, on which is a lighthouse, and by the Island of Kiamari on the east. The town, which is well built and has a good reputation for healthiness, came into British possession in 1842, and its extensive commerce, fine harbor works, and numerous flourishing institutions have all sprung up since that time. Pop. 153,908.

Kursk (kursk), a government of Southern Russia, area 18,901 square miles. The surface is undulating, and there are numerous streams, but none of them serviceable as waterways. The climate is mild and dry, and the rich soil produces abundant crops. Pop. 2,391,091 —KURSK, the chief town, on the Tuskora near its junction with the Sem, forms a railway junction from Moscow, Kieff, and Khartoff. The principal public buildings are the Cathedral of the Resurrection, the Cathedral of St. Sergius, and a monastery. Pop. (1912) 83,330.

Kusi. See *Coosy.*

Kusnezk (kös-nyesk'), a town in Russia, government of Saratov. Pop. 17,932.

Küstendji (küs-tend'ji), a Roumanian seaport of the Dobrudja, on the Black Sea, 140 miles E. of Bukarest. It is the chief outlet for the produce of the Dobrudja. Pop. about 3000.

Küstenland (küs'ten-lānt; 'Coastland'), an administrative division of the Austrian Empire, at the head of the Adriatic, consisting of the county of Görz and Gradiska and the margraviate of Istria, with the town of Trieste; area, 3084 square miles. The majority of the inhabitants are of Slavonic origin, but there is also a large proportion of Italians and a considerable number of Germans. Pop. 755,183.

Küstrin (küs'trin), or CÜSTRIN, a fortified town in Prussia, in the province of Brandenburg, 16 miles north of Frankfurt-on-the-Oder, at the

junction of the Warthe with the Oder. It contains a castle in which Frederick the Great was confined by his father, and has manufactures of woolens, machinery, brass and copper wares, etc. Pop. 16,643.

Kutais (ku-tä'is), a Russian town, in Transcaucasia, capital of a government of the same name, 60 miles east from the Black Sea, on the railway between Poti and Tiflis. Pop. 32,492. The government has an area of 14,100 square miles, and pop. of 933,778.

Kutaya, or KUTA'IAH (kö-tä'yä), a town in Asiatic Turkey, 180 miles northeast of Smyrna, on the route between Constantinople and Konia. It is the center of the tract where the famous Turkey carpets are manufactured. Estimated pop. 25,000.

Kuteh. See *Cutch.*

Kut-el-Amara (köt-el-a-ma'ra), a small town in Mesopotamia on the Tigris at the junction of the Shatt-el-Hai. It is a coaling station for the Bagdad-to-Basra steamers. It acquired importance during the European war when a British force under General Townshend was surrounded by the Turks and forced to surrender. In February, 1917, the town was taken by Indo-British troops under Sir Stanley Maude.

Kuttenberg (köt'en-berg), a mining and manufacturing town of Bohemia, 38 miles E.S.E. of Prague. Pop. 14,799.

Kutusoff (kö-tö'sof), MIKHAIL, a Russian field-marshal, born in 1745; died in 1813. He served against Poland, Turkey and France. For his victories over Ney and Davoust he received the title of Prince Smolensky.

Kuvera (kö-vē'ra), in Hindu mythology, the god of wealth. He resides in the splendid palace of Alaka, on Mount Meru, and is borne through the sky by four attendants on a radiant car given to him by Brahma. He has no temples dedicated to him, and no altars. On his head is a richly ornamented crown, and two of his four hands hold closed flowers of the lotus.

Kuyp (koip), or CUYP, ALBERT, Dutch painter, born at Dort in 1605; died in 1691. He studied under his father, Jacob Gerritsz Kuyp, a painter of some fame. He painted with great success landscapes, cattle, river scenes, portraits and pictures of still life. He particularly excelled in the purity and brilliancy of light; and he was not surpassed, even by Claude, in accurate representation of the atmosphere, and of the effects of sunshine. The best of his pictures are his landscapes, with meadows, herds and horsemen, and often with boats and barges.

Kwango, or KUANGO (kwängö), a great river of Central South Africa, belonging to the Congo system, flowing almost due north, and joining the Kassai.

Kwangsi (kwäng'sē'), a province of China, lying between lat. 22° and 28° N., and lon. 105° and 112° 30′ E. It is mountainous, and is watered by the numerous branches of the Tao or Sikiang. Rice is largely grown, and gold, silver and mercury are mined. Area, 78,250 square miles; pop. about 5,000,000.

Kwang-seu, a Chinese emperor, born in 1871. He was chosen to succeed the Emperor Tung-Che in 1875, being the infant grandson of the Emperor Taoo Kwang, who died in 1850. His aunt, Tsze Hsi, the empress dowager, who had long been practically empress, continued to rule as regent during his minority. After he came of age he, under the influence of reformers, set in train a series of radical changes in the government. To prevent this the empress, supported by the conservative party, seized the reins of power, holding him under strict palace surveillance. In later years, however, she consented, under the pressure of events, to still greater reforms than those proposed by him. He died in November, 1908, and was succeeded by another infant emperor, Pu Yi. The empress dowager died the day after him.

Kwangtung (kwang'töng'), the most southerly province of China, bordering on the Gulf of Tonquin and the China Sea. The northern part is mountainous, but the southern region is about the most fertile in China. It includes Hainan and a number of smaller islands along the coast. The capital is Canton; other ports are Swatow and Pakhoi. Area, 79,456 square miles; pop. about 30,000,000.

Kweichow (kwi'chou'), a province of S. W. China, bounded by Sechuen, Yunnan, Hunan and Kwangsi. It is rough and mountainous, produces rice, tobacco and timber, and has mines of copper, iron, lead and mercury. Area, 64,554 square miles; pop. above 8,000,000.

Kyanite. See *Cyanite.*

Kyanizing (ki'an-iz-ing), a process for preserving timber, cordage, etc., from the effects of dry-rot, named from the inventor, a Mr. Kyan. It consists in immersing the material to be preserved in a solution of corrosive sublimate. This process is now almost entirely disused, as wood is much better

preserved by being saturated with creasote or coal-tar.

Kyd (kid), THOMAS, an English dramatist, who flourished about 1580, a shore time before Shakespere. His extant works are *Cornelia, or Pompey the Great his fair Cornelia's Tragedy; The First Part of Geronimo;* and *The Spanish Tragedy.* The last named displays much power and is thought to have suggested to Shakespere some parts of *Hamlet.*

Kyffhäuser (kif'hoi-zer), an ancient palace (now in ruins), of the emperors of the Hohenstaufen dynasty, on an eminence near the village of Tilida, Germany. There is a popular tradition that the Emperor Frederick Barbarossa still exists at this place in a magnificent subterranean palace, in a state of enchantment, seated with his knights around a stone table, through which his beard has grown. Every hundred years he partly wakes and sends someone to inquire how the time is going. After a certain time he will awake and bring better times to his empire.

Kyle (kil), the middle district of Ayrshire, Scotland.

Kyoto (ki-ō'tō), or MIAKO, for over a thousand years the capital of Japan, is on a plain about 26 miles inland from Ozaka. Here remain the plain wooden buildings in which the emperors of Japan dwelt for so long in seclusion, retaining only their spiritual supremacy. It is an active industrial city, its porcelain, brocades, enamels, bronzes and embroideries being highly esteemed. Pop. (1914) 508,068.

Kyrie Eleison (kī'ri-ē ā-lī-son; from the Greek *Kyrie eleison,* 'Lord, have mercy'), a kind of invocation used in parts of the Roman Church service, and the name given to the responses after the commandments in the Anglican Church. It is almost the only part of the liturgy in which the Roman Catholic Church has retained Greek words.

Kyrle (kèrl), JOHN, surnamed by Pope the *Man of Ross,* was born in Gloucestershire in 1637; died at Ross, Hereford, in 1724. He was distinguished by his active benevolence and also for enlisting the sympathies of his wealthy neighbors in his plans for making life more pleasant to his townsfolk.

L

L, the twelfth letter of the English alphabet, is usually denominated a semivowel or a liquid. *L* has only one sound in English. The nearest ally of *l* is *r*, the pronunciation of which differs from that of *l* only in being accompanied by a vibration of the tip of the tongue. There is no letter, accordingly, with which *l* is more frequently interchanged, instances of the change of *l* into *r* and of *r* into *l* being both very common in various languages. In fact, in the history of the Indo-European alphabet *l* is considered to be a later modification of *r*.

La, in music, the sixth of the seven syllables—*ut* or *do*, *re*, *mi*, *fa*, *sol*, *la*, *si* (or *ti*)—representing the seven sounds in the diatonic scale.

Laager (lä'gèr; D. 'a camp'), in South Africa, an encampment more or less fortified. The original Boer laager is an enclosure made of the wagons of a traveling party for defense against enemies.

Laaland (lol'lan), or LOLLAND, an island in Denmark, s. of Seeland, and separated from Falster on the E. by the narrow Guldborgsund; greatest length, S. E. to N. W., 36 miles; breadth, varying from 9 miles to 17 miles; area, 462 square miles. The surface is low and level; the soil very fertile, yielding crops of corn, beans, hops, hemp and excellent timber. Pop. 70,596.

Laar, or LAER (lär), PIETER VAN, surnamed *Il Bemboccio*, a Dutch painter, born in 1613; died at Haarlem in 1674 or 1675. He made a long residence at Rome, returning to Holland about 1639. He painted generally lively scenes from peasant life, fairs, children's games, hunting scenes, landscapes, etc.

Labarum (l a b'a-r u m), the imperial standard adopted by Constantine the Great after his miraculous vision of the cross and conversion to Christianity, differently described and figured, but generally represented as a pole having a crossbar with the banner depending from it and bearing the Greek letters XP (that is, *Chr*), conjoined so as to form a monogram of the name of Christ.

Labat (lä-bä), JEAN BAPTISTE, a French missionary and traveler, born in 1663; died in 1738. He spent about twelve years in the West Indies, and is best known by his *Nouveau Voyage aux Iles de l'Amérique*. He also published a *Nouvelle Relation de l'Afrique Occidentale; Voyage en Espagne et Italie; Relation Historique de l'Ethiopie Occidentale*, and *Mémoires du Chevalier d'Arvieu*.

Labédoyère (lä-bä-dwä-yär), CHARLES ANGÉLIQUE HUCHET, COMTE DE, French general, was born in 1786; shot in 1815. He entered the army in his 20th year, served with much distinction in Spain, Germany, etc., and was several times severely wounded. Napoleon raised him to the rank of general of division in 1815, and he fought with great courage at Waterloo. After the battle he hurried to Paris, and there distinguished himself by his hostility to the Bourbons. On the capitulation of Paris he followed the army behind the Loire, but returning to Paris, he was taken, tried by court-martial, and sentenced to death.

Label (lä'bel), in Gothic architecture, a projecting tablet or molding over doors, windows, etc., called a hood-molding, and a drip, dripstone, or weather-molding when it is turned square.

Labials (lä'bi-als), letters or characters representing a sound or articulation formed or uttered chiefly by the lips, as *b*, *f*, *m*, *p*, *v*.

Labiatæ (la-bi-a'tē), the mint tribe, a very important and extensive natural order of exogenous plants, with a gamopetalous corolla presenting a prominent upper and lower lip, and a four-lobed ovary, changing to four seed-like monospermous fruits. This order contains about 2000 species, mostly herbs, undershrubs, or shrubs with opposite or whorled leaves, usually square stems, and a thyrsoid or whorled inflorescence. They are spread throughout the world, and abound in all temperate latitudes. Many are valued for their fragrance, as lavender and thyme; others for their stimulating qualities, as mint

and peppermint; others as aromatics, as savory, basil and marjoram; several are used as febrifuges. Betony, ground ivy, horehound and others possess bitter tonic qualities. Numerous species are objects of great beauty.

Labiche (lá-bēsh), EUGÈNE MARIN, a French dramatist, born in Paris in 1815. He, chiefly in collaboration with other authors, brought out upwards of 100 plays, many of them very successful. They are mostly distinguished by extravagant plots, and are full of droll situations. In 1880 he was elected to the Academy. Died in 1888.

Labor, in political economy, one of the three leading factors in production, the other two being land and capital. It is more fundamental than capital, which originally is the result of labor. A distinction insisted on by many economists is that into productive and unproductive labor. The former consists of those kinds of exertion which produce utilities embodied in natural objects. Unproductive labor, like that of the musician, while both useful and honorable, does not add to the material wealth of the community. Towards the close of the 18th century the effect of the industrial revolution was to organize labor in large factories and similar undertakings; and in the early decades of the 19th century the growing ideas of freedom had begun to make other great changes in the condition of the workers. The formation of trades-unions and co-operative societies has greatly strengthened the position of labor, and laws for the regulation of labor are now intended not to fix wages as formerly, but to protect the workers.

Labor, DEPARTMENT OF, an executive department of the United States government, created in 1913. It has charge of the labor interests of the country, and its head official is a member of the president's cabinet.

Labor Day, the first Monday in September, is set apart to be celebrated by the organisations of labor in the United States. It originated in 1882, and is now a legal holiday in all the States.

Labor Organizations. The various countries of the world have been very active within recent years in the organization of workingmen, alike in minor combinations of trades and general organizations, embracing nearly all the artisans of a country. Some of these, indeed, have expanded to international dimensions. In the United States, for instance, in addition to the very numerous trades unions, there are several great organizations including many of those minor bodies. The eldest of these is the *Knights of Labor*, organized in Philadelphia in December, 1869. It grew rapidly in numbers until in 1886, its membership was over 500,000. It spread into Canada, Great Britain and Belgium, but since then its membership has much decreased, through the activity of other organizations. Of these the *American Federation of Labor* has made much the greatest progress. Its principal objects are to promote the interests and influences of trades unions, to aid in creating new unions, and to advance the general cause of organized labor. It does not undertake, however, to exercise any absolute authority over affiliated societies. It has been especially active in agitating for 'eight hour' legislation and in combating what it considers the unjust use of the principle of injunction. It has also striven to extend the use of the union label by its affiliated bodies, also of the union button and store cards. It has been under the able presidency of Samuel Gompers, with an intermission of one year, since its organization, and in 1913 embodied 118 national and international unions, representing approximately 27,000 local unions, and had a paid membership of about 2,000,000. One result of the activity of organized labor has been legislation of an important character, including enactments providing for the insurance of workmen against accident and making employers responsible for accidents due to negligence on their part; also for the regulation of woman and child labor. *The Industrial Workers of the World* is another powerful labor organisation, with headquarters in Chicago. It refuses all alliances, direct or indirect, with existing political parties or anti-political sects, and believes that the mission of the working class is to do away with capitalism, take possession of the earth and the machinery of production, and abolish the wage system. They differ from the labor unions in organizing by industries rather than by trades, and from syndicalism in that great stress is laid upon having a form of organization to correspond with capitalist industry itself. The I. W. W. is particularly strong in the lumber industry of Washington and Oregon. The organization came into disfavor in the Great War, many of its members being charged with disloyalty. Labor organizations in Great Britain have long been prominent and exhibited their power during the war. Germany, France, Italy and some other countries have similar organizations. More recently Japan has come to the fore in the matter of labor unions. Its leading organization is the

Yuai-hei (Friendship Association). See also *Syndicalism*.

Laboratory (lab'or-a-to-ri), a building or workshop designed for investigation and experiment in chemistry, physics, etc. It may be for special research and analyses or for quite general work. To the former class belong the laboratories which are attached to dye-works, color works, chemical and similar works. Laboratories are also attached to mining and metallurgical schools, to mints, to arsenals, etc. A general laboratory, such as might be attached to a school or university, is apt to include a variety of specialties, partly because the whole science and its applications have to be taken into account and exhibited, partly because students with very different aims frequent such places.

Labouchère (lab'u-shär), HENRY, an English politician and writer, was born in 1831, and educated at Eton. He was in the diplomatic service from 1854 to 1857; became a member of Parliament in the Radical interest for Windsor (1865-66), Middlesex (1867-68), and Northampton after 1880. He has gained a certain renown for his vivacious and satirical style, both in speaking and writing. He contributed *Letters of a Besieged President in Paris* to the *Daily News*—of which he was part proprietor—during the Franco-German war. In 1877 he started *Truth*, a weekly society paper. He died January 16, 1912.

Laboulaye (lä-bö-lä), EDOUARD RENÉ LEFEBVRE, a French publicist, born in 1811; died in 1883. He attained a high position as a writer of historical, social and playfully satirical works. Among his best-known writings are *History of Landed Property in Europe; History of the United States; Germany and the Slavic States; Paris in America; The New Bluebeard; The Poodle Prince; Prince Caniche*, etc., etc.

Labrador (lab'ra-dōr), a country on the east coast of North America, between Canada and the Atlantic Ocean. The interior consists mostly of a tableland 2000 or more feet high. There are a number of lakes drained partly by rivers flowing towards Hudson Strait, partly by others (such as Grand River) reaching the Atlantic in the southeast. The wild animals include the caribou or reindeer, bears, wolves, foxes, martens, and other fur-bearing animals. The climate is rigorous, there being about nine months of winter. No ordinary cereal can ripen in the climate, though barley cut green is used as fodder, and potatoes and some culinary vegetables can be grown. The population (not over 15,000) consists of Indians, Eskimos and half-breeds, with a few whites on the coast. In summer it is increased by some 30,000 persons, chiefly from Newfoundland and connected with the fisheries. The Moravians have a number of missions along the coast, the Church of England one or two. The Hudson Bay Company has several posts. Labrador is also the name given to the whole peninsula between the Atlantic, Hudson Strait and Hudson Bay and the St. Lawrence. See *Canada, Northeast Territory, Quebec*.

Labradorite (lab'ra-dōr-it), LABRADOR FELSPAR, a mineral found on the coast of Labrador, and formerly called *Labrador hornblende*, though it is the designation of hyperstene. It is a lime-soda felspar, and is distinguished by its splendent changeability of color. Blue and green are the most common colors, but occasionally these are intermingled with rich flame-colored tints. It is sawed into slabs by the lapidaries, and employed in inlaid work.

Labrador Pine. Same as *Banksian Pine*.

Labrador Tea, a name given to two species of the genus *Ledum* (*L. latifolium* and *L. palustre*). They grow in the north of Europe, and in America north of Pennsylvania. They are species of heath, and are low shrubs with alternate entire leaves clothed underneath with rusty wool. The fragrant crushed leaves are used by the natives of Labrador as a substitute for tea. They possess narcotic properties, render beer heady, and are used in Russia in the manufacture of leather.

Labret (la'bret), an ornament worn in a hole in the lip by certain tribes of savages. This custom is found among various Indian tribes and through parts of Central Africa, in some instances only by women, in others, as the Eskimos of Alaska, by men as well. Labrets may be oval pieces of wood, bone or ivory two inches wide, or may take other shapes. In Central Africa the labrets worn by women are so large and the lower lip so distended as at times to hide the whole face when lifted.

Labridæ (lab'ri-dē), the wrasse tribe, a family of acanthopterygious fishes, having the genus *Labrus* as the type. The ventral fins are under the pectorals, and the scales are cycloid.

Labrum. See *Labium*.

Labruyère, JEAN DE. See *Bruyère*.

Labuan (lä-bö-än'), a small British colony consisting of an

island on the N. W. of Borneo. Area, 81 square miles; pop. 6298, mostly Malays from Borneo. It is well supplied with water, and has a good harbor at the settlement of Victoria, on its southeast side. Coal of excellent quality is plentiful, but has been mined hitherto with indifferent success. Other products are timber, caoutchouc, gutta-percha, wax and sago. Its chief trade is between Borneo and Singapore. This island was taken possession of by the British in 1846, and is administered by a governor and a legislative council.

Laburnum (la-bur'nam), a tree of the genus *Cytisus*, the *C. Laburnum*, nat. order Leguminosæ, a native of the Alps, much cultivated by way of ornament. It is well and widely known for the beauty of its pendulous racemes of yellow, pea-shaped flowers. The seeds contain a poisonous substance called cytisine, and are violently emetic. The wood is much prized by cabinet-makers and turners, being wrought into a variety of articles which require strength and smoothness.

Labyrinth (lab'i-rinth), a structure having numerous intricate winding passages, which render it difficult to find the way through it. The legendary labyrinth of Crete, out of which no one could find his way, but became the prey of the Minotaur, was said to have been constructed by Dædalus. The hint of this legend was probably given by the fact that the rocks of Crete are full of winding caves. The Egyptian labyrinth was a building situated in Central Egypt, above Lake Moeris, not far from Crocodilopolis (Arsinoe), in the district now called the Fayoum. The building, half above and half below the ground, contained 3000 rooms. It was probably a place of burial. The labyrinth at Clusium, in Italy, was erected by the Etruscans, according to Varro, for the sepulcher of King Porsenna. There were other labyrinths at Lemnos and Samos, but their sites are unknown. Imitations of labyrinths, called mazes, were once fashionable in gardening. They were made of hedges of privet, or some similar shrub. The best known is that of Hampton Court.

Labyrinth, the name given, during the European war, to a section of the battle line held by the Germans behind the village of Neuville-Saint-Vaast, near Arras, in the department of Pas de Calais. It was a maze of block-houses, shelters, saps, caverned chambers, and armored concrete defenses and tunnels, on which the German engineers had exhausted all their science. It was built around two sunken country lanes, from which spread, for a mile and a half on either side, works of every kind, amply furnished with machine guns and bomb-throwers. It was taken by the French in June, 1915.

Labyrinthodon (lab-i-rinth'o-don), a genus of fossil amphibians, whose remains are found in the carboniferous, permian and trias formations, those of the trias being found in England, India and Africa. They were allied to the crocodile and to the frog, and were 10 to 12 feet long. The name is derived from the labyrinthine structure of a section of the tooth, when seen under the microscope. The hypothetical cheirotherium has been identified with the Labyrinthodon.

Lac, or Lax, from the Sanskrit *lakshá* or *laksha*, that is, 100,000. In the East Indies it is applied to the computation of money. Thus, a lac of rupees is 100,000.

Lac, a resinous substance produced upon numerous Indian trees by the exudations from the body of the female of the *Coccus ficus* or *Coccus lacca*. The finest is found on the palas or dhak (*Butĕa frondōsa*), the peepul (*Ficus religiōsa*), and the koosum (*Schleichĕra trijūga*). It is composed of five different varieties of resin, with a small quantity of several other substances, particularly a red coloring matter. It is formed chiefly by the female insects, each of which inhabits a cell, the encrustation of which seems intended to serve as a protection for the young. When the covering is complete the eggs are laid and the mother dies. The young break their way out, swarm on to the bark, and immediately commence the secreting of lac. In India the cultivation of the lac insect has received much attention. *Stick-lac* is the substance in its natural state, encrusting small twigs. When broken off and washed with water it almost entirely loses its red color, and is called *seed-lac*, from its granular form. When melted and reduced to a thin crust, it is called *shell-lac*. Mixed with turpentine, coloring matters, and other substances, lac is used to make differently colored sealing wax. Dissolved in alcohol or other menstrua, by different methods of preparation, it constitutes various kinds of varnishes and lacquers.—*Lac-dye* and *lac-lake* are coloring matters used in dyeing cloth scarlet, obtained by different processes from stick-lac. In the state in which they are found in commerce they have the form of little cakes. They were formerly obtained only from the East, but a superior kind of lac-dye is now manufactured in England from

stick-lac. The coloring matter of lac-dye is analogous to cochineal.

Lacaille (lá-ká-yé), Nicholas Louis de, a French mathematician and astronomer, was born in 1713; and died in 1762. He was educated for the church, but soon renounced theology for astronomy. He took an important part in the work of measuring an arc of the meridian, and in 1746 he was appointed professor of mathematics in Mazarin College. In 1751 he went to the Cape of Good Hope at the expense of the government, where he determined the position of about 10,000 stars with wonderful accuracy. As his departure from the Cape was delayed he employed the interval in measuring a degree of the southern hemisphere. His works on geometry, mechanics, astronomy and optics were numerous. Among them are *Leçons d'Astronomie* and *Astronomiæ Fundamenta*. His *Cœlum Australe Stelliferum* and *Journal Historique du Voyage fait au Cap de Bonne Espérance* were published after his death.

Laccadive Isles (la'ka-dîv), a group of fourteen small coral islands including three reefs in the Indian Ocean, about 150 miles off the coast of Malabar, belonging to British India. The islands are well supplied with fish, and export quantities of coir or cocoanut fiber. Cocoanuts, cowries, jaggery, plantains, poultry, etc., are the only other exports, and are of little importance. The natives are a race of Mohammedans called Moplas (of mixed Hindu and Arab descent). They are bold seamen and expert boat-builders. Pop. 10,274.

Lace (lās), a delicate kind of network, formed of silk, flax, or cotton thread, and used for the ornamenting of women's dresses. It is made either by hand or machine, the former being produced by the needle, or made on the pillow. Needle laces are called *point*, those made on the pillow, *cushion*, *bobbin*, or *bone* laces. A prominent feature in all laces is the pattern or ornament; this may be worked either with or without a groundwork. Pillow lace consists of hexagonal meshes, four of the sides of each mesh being formed by twisting two threads round each other, and the other two sides by the simple crossing of two threads over each other. The pattern on parchment or vellum is attached to the pillow, and pins are stuck in the lines of the pattern, round which the threads are plaited and twisted so as to form the required design. Among the laces of this class are Honiton, Buckingham, Mechlin, Valenciennes, etc. Point laces, made entirely by the needle and single thread, are known as Brussels, Alençon, Maltese, etc. Guipure lace consists of a network ground on which patterns are wrought in various stitches with silk, etc. It was

Battenberg Lace.

originally a lace made in silk, thread, etc., on little strips of parchment or vellum. At Nottingham and elsewhere imitations of lace are produced by machines, called point net and warp net, from the names of the machines in which they are made. They are both a species of chain work, and the machines are varieties of the stocking-frame. The manufacture of lace appears to have existed from a considerably remote antiquity, as in the representations of Grecian female costume which have come down to us the dresses are frequently ornamented with lace of beautiful patterns. In modern times point lace originated in Italy, from which the manufacture spread to Spain and Flanders. Pillow lace was first made in the Low Countries. See *Battenberg*.

Lace-bark Tree (*Lagetta lintaria*), a tree of the natural order Thymelaceæ or Daphne family, is a native of the West Indies. It receives its common name from the fact that when its inner bark is cut into thin pieces, after maceration it assumes a beautiful net-like appearance. It is used by females by way of ornament, and the negroes manufacture matting from it.

Lacedæmon (la-se-dē'mun). See *Sparta*.

Lace-leaf. See *Lattice-leaf*.

Lacépède (lá-sā-pād), Bernard Germain Etienne de la Ville-sur-Illon, Count de, a French naturalist, born in 1756; died in 1825. He abandoned the military profession, for which he was educated, and devoted himself to the study of natural history. His teachers and friends, Buffon and Daubenton, procured him the important situation of keeper of the collections belonging to the department of natural history in the Jardin des Plantes. In 1791 he was

elected member of the legislative assembly, and belonged to the moderate party. During the reign of terror he found refuge in the country. Napoleon made Lacépède a member of the conservative senate, and conferred on him the dignity of grand-chancellor of the Legion of Honor. After the restoration he was made a peer of France. In 1817 he published a new edition of Buffon's works. His *History of Fishes* is considered his principal work. He published likewise the *Natural History of Oviparous Quadrupeds and of Reptiles.*

Lacerta, LACERTIDÆ. See *Lizard.*

Lace-winged Flies, insects of the genus *Hemerobius*, order Neuroptera, so called from their delicate wings having many netted spaces like lace. The larvæ are exceedingly voracious, and feed upon aphides.

Lachaise (lä-shäz), FRANÇOIS D'AIX DE, confessor of Louis XIV, member of the congregation of Jesuits, was born in the Château d'Aix in 1624; died in 1709. Lachaise commenced his course of studies in the Jesuit College at Rohan, and finished it at Lyons. He was the provincial of his order when Louis, on the death of his former confessor, Father Ferrier, appointed Lachaise his successor in 1675. He had much influence with the king, and, acting with prudence and moderation, he kept the post till his death. He left philosophical, theological and archæological works. Louis XIV had a country house built for him to the west of Paris, the extensive garden of which now forms the cemetery of Père Lachaise, the largest in Paris.

Lachesis (lak'e-sis), the name of one of the three Fates, whose duty it was to spin the thread of life.

Lachine (lä-shēn'), a town of Canada, province of Quebec, on Montreal Island; essentially a manufacturing town. There are here rapids on the St. Lawrence which are avoided by means of a canal 9 miles long from Montreal harbor. Pop. (1911) 11,519.

Lachlan (lok'lan), a river of Eastern Australia, rising in New South Wales, to the west of the Blue Mountains. It is joined by the Murrumbidgee, the united stream afterwards falling into the Murray. It has a total length of about 700 miles.

Lachmann (läk'män), KARL, a German critic and philologist, born at Brunswick in 1793; died at Berlin in 1851. He studied at Leipzig and Göttingen, and became a professor at Königsberg in 1818, and afterwards at Berlin in 1827. His critical sagacity was very great, and he published valuable editions of the Latin and old German classics.

Lachrymæ Christi (lak'ri-mē kris'tī; literally 'tears of Christ'), a sweet but piquant muscatel wine of agreeable flavor produced from grapes grown on Mount Somma, the second summit of Vesuvius. There are two kinds, the white and the red, of which the former is generally preferred.

Lachrymal Organs. See *Eye.*

Lachrymatory (lak'ri-ma-to-ri), a small glass vessel found in ancient sepulchers, in which it has been supposed the tears of a deceased person's friends were collected and preserved with the ashes and urn.

Lackawanna, a city in Erie County, New York. Dating since 1900, it had in 1910 a pop. of 14,549.

La Condamine (lä kon-dä-mēn), CHARLES MARIE, was born at Paris in 1701, and died at the same place in 1774. He entered the military profession, but soon renounced this career, and devoted himself to the sciences. In 1736 he was chosen, with Godin and Bouguer, to determine the figure of the earth, by measurements to be made in the equatorial regions of South America, and he remained abroad for eight years. In 1748 he was elected a fellow of the Royal Society of London, and in 1760 a member of the Academy of Sciences of Paris. His principal works are his account of his travels, his work on the figure of the earth, etc.

Laconia (la-kō'ni-a), a city, capital of Belknap County, New Hampshire, 27 miles N. by E. of Concord. It has extensive manufactures of hosiery, yarn, railroad cars, knitting machinery, woolen goods, etc. Pop. 12,000.

Lacordaire (lä-kor-där), JEAN BAPTISTE HENRI DOMINIQUE, a French pulpit orator, born in 1802; died in 1861. He was educated for the law, which he renounced for the church, and received holy orders in 1827. In 1830 he was associated with Lamennais and Montalembert in conducting *L'Avenir*, in which the highest church principles and extreme radicalism were advocated with great eloquence and ability. Their paper was condemned by the pope in 1832, whereupon Lacordaire devoted himself to the duties of the pulpit, and the freedom and eloquence with which he treated social affairs in his discourses attracted admiring and spell-bound audiences. He became a Dominican friar in

1846, and his fame as an orator being now fully established, his advocacy of charities was eagerly sought, not only in Paris, but in the provinces. In the first election after the revolution of 1848 he was chosen the representative in the Constituent Assembly for the department of Bouches-du-Rhône, but resigned his seat after a few weeks. In 1850 the pope conferred on him the office of provincial of the Dominicans in France, which he held for four years. In 1860 he was elected into the Académie Française. His chief works are *Considerations on the Philosophic System of Lamennais, Sermons at Nôtre Dame, Letter on the Holy See, Letters on the Christian Life,* etc.

Lacquer (lak'ér), a varnish usually consisting of a solution of shell-lac (sometimes sandarach, mastic, etc.) in alcohol, colored by arnotto, gamboge, saffron, and other coloring matters, for coating brass and some other metals, to give them a golden color, to preserve their luster, and to secure them against rust. Lacquered brass appears as if gilt, and tin is made yellow. Lacquering is also applied to the coating with varnish of goods in wood and papier-mâché. The Japanese and Chinese excel in works of this kind.

La Crosse (lá-kros), a city, capital of county of same name, Wisconsin, on the Mississippi, near the mouth of La Crosse River, about 40 miles below Winona. It has a fine city hall, courthouse, opera houses, etc. Here are very extensive lumber mills, with an output of over 300,000,000 feet of sawed lumber annually; also large breweries and cooperages, foundries and machine shops, and other manufactures. It is an important shipping point for grain, lumber, etc. Pop. 30,417.

Lacrosse, a game at ball, originating with the Indians of Canada, played somewhat on the principle of football, except that the ball is carried on an implement called the *crosse*, the player in possession running with it towards the enemy's goal, and when on the point of being caught, passing it by tossing to one of his own side, or throwing it over his head as far in the direction of the goal as possible. Lacrosse clubs are now pretty numerous in Britain.

Lactantius (lak-tan'shi-us), LUCIUS CŒLIUS FIRMIANUS, or LUCIUS CÆCILIUS FIRMIANUS, a celebrated father of the Latin Church, probably a native of Italy, and born about the middle of the third century. He lived for a long time at Nicomedeia as a teacher of rhetoric, until Constantine the Great invited him to Gaul, and committed to his care the education of his eldest son Crispus. He died at Treves about 325. His writings are characterised by a clear and agreeable style. His seven

Crosse or Bat.

books, *Institutiones Divinæ*, are particularly celebrated, and worthy of notice.

Lacteals (lak'te-als), numerous minute tubes which absorb or take up the chyle or milk-fluid from the alimentary canal, and convey it to the thoracic duct. See *Chyle, Lymph.*

Lactic Acid (lak'tik) ($C_3H_6O_3$), an acid found in several animal liquids, and particularly in human urine. It is not only formed in milk when it becomes sour, but also in the fermentation of several vegetable juices, and in the putrefaction of some animal matters. It is a colorless, inodorous, very sour liquid, of a syrupy consistence. It coagulates milk.

Lactine, LACTOSE (lak'tōs), sugar of milk ($C_{12}H_{22}O_{11}$), a substance obtained by evaporating whey, filtering through animal charcoal, and crystallising. It forms hard, white, semitransparent trimetric crystals, which have a slightly sweet taste, and grate between the teeth. It is convertible like starch into glucose by boiling with very dilute sulphuric acid.

Lactometer (lak-tom'e-ter), or GALACTOMETER, an instrument for ascertaining the different qualities of milk. Several instruments of this sort have been invented. One consists of a glass tube 1 foot long, graduated into 100 parts. New milk is filled into it and allowed to stand until the cream has fully separated, when its relative quantity is shown by the number of parts in the 100 which it occupies.

Lactose. See *Lactine.*

Lactuca (lak-tū'ka), the lettuce genus of plants. See *Lettuce*.

Ladakh (lä-dăk'), a governorship under the Maharajah of Cashmere, of irregular outline, comprising part of the valley of the Upper Indus and its tributaries, and lying at the back of the central range of the Himalayas; area, about 30,000 square miles; capital, Leh. The climate is characterized by cold and excessive aridity. The wool of the goat is the well-known shawl-wool of Cashmere. There is a considerable transit trade. Ladakh being naturally the great thoroughfare between Chinese Tartary and Tibet, on the one hand, and the Punjab, on the other. The trade is supervised by two commissioners, one native and one British. The language is Tibetan, and the government a despotism controlled by the priesthood. The inhabitants are of Mongolian race and Buddhist religion. Polandry prevails.

Ladanum (lad'a-num), a delicately scented, resinous gum which exudes from certain plants of the Cistus family growing in Crete, Cyprus and Asia Minor. In Cyprus the gum is collected from the beards of goats.

Ladrones (la-drōnz' or la-drō'nes), or MARIANA ISLANDS, a group of fifteen islands in the Pacific Ocean, north of the Caroline Islands; total area about 420 square miles. Guam is the southernmost and largest; next in importance is Rota. The islands are mostly of volcanic origin, and are very rugged. Five are of coral formation. They were discovered by Magelhaens in 1521, and were settled by the Spaniards. June 21, 1898, during the war with Spain, the United States cruiser *Charleston* took possession of Guam, hoisting the American flag over Fort Santa Cruz. The United States retains Guam. The other islands were sold by Spain to Germany in 1899.

Ladd, GEORGE TRUMBULL, an American psychologist, born at Painesville, Ohio, January 19, 1843; was graduated (1864) at Western Reserve College. He finished his course at Andover Theological Seminary, 1869, and became pastor of the church at Edinburg, Ohio. From 1871 to 1879 he was in charge of a church at Milwaukee, Wis. During the succeeding two years he held the professorship of philosophy at Bowdoin College and at the same time lectured on theological subjects at Andover. In 1881 Dr. Ladd accepted the professorship of philosophy at Yale. He became emeritus professor in 1905. He published among other books, *Introduction to Philosophy* (1890), *Psychology, Descriptive and Explanatory* (1894), *Philosophy of Mind* (1891), *Philosophy of Knowledge* (1897), *Philosophy of Conduct* (1902), and *Philosophy of Religion* (1905).

Ladoga (lä'dō-ga) LAKE, the largest lake in Europe, situated N. of Petrograd and crossed by the frontier-line between that country and Finland. It is 129 miles in length, 78 in breadth, and 6998 square miles in area. There are numerous islands. It receives the waters of Lake Onega and Lake Ilmen in Russia, and of Lake Saima and other lakes in Finland; and its own waters are carried off to the Gulf of Finland by the Neva. The average depth of Lake Ladoga does not exceed 300 feet.

Lady (lā'di), as a title, is borne in Britain by the wives of knights, and of all degrees above them, except the wives of bishops. The legal designation of the wife of a knight or baronet is *Dame*, though it is customary to designate her by *Lady* prefixed to her husband's surname. In the United States it is a term of general application. See *Address (Forms of)*.

Lady-bird, the name of a number of small coleopterous insects, or beetles, common on trees and plants in gardens. They form the genus *Coccinella* of Linnæus. They are usually ornamented with scarlet spots. They are of great service to cultivators on account of their destruction of aphides or plant-lice.

Lady Chapel, a chapel dedicated to the Virgin Mary, frequently attached to large churches. It was variously placed, but generally to the eastward of the high altar, and in churches of earlier date than the thirteenth century the lady chapel is frequently an additional building. See under *Cathedral*.

Lady-day, the 25th of March, the day commemorating the Annunciation of the Virgin Mary, one of the regular quarter-days in England and Ireland. It is one of the immovable festivals of the Roman Catholic and Anglican churches.

Lady-fern, a species of polypodiaceous fern, the *Athyrium Filix-fœmina*, common in Great Britain. It has bipinnate or tripinnate fronds of delicate texture, and of a remarkably elegant plumy structure.

Lady's-slipper (*Cypripedium*), a beautiful genus of orchideous plants, conspicuous for its large inflated flowers. The species are confined to the northern regions of the globe. Three species are natives of the United States. *C. Arietinum*, found in the north, remarkable for the form of the lips, readily suggests the name.

Laennec (lä-en-nek), René Théophile Hyacinthe, a French physician, born at Quimper, in 1781; died in 1826. His fame rests on the splendid discovery of mediate auscultation; that is, of the use of the stethoscope. The original discovery, however, is claimed for Avenbrugger. In 1821 he was appointed professor of medicine in the College of France. The following year he was appointed professor of clinical medicine, and regularly performed the duties of his office till his death.

La Farge, John, artist, was born in New York in 1835, studied architectural decoration and painting, began painting with religious subjects and decorative work, then became a flower and landscape painter, and during his later years occupied himself with the making of stained glass windows, inventing the new methods known as 'American' and completely changing the art of the glass stainer. Among his noted works are *Paradise at Newport*, *Christ and Nicodemus*, and the frescoes of Trinity Church, Boston. He died in 1910.

La Farina (lä fä-rē'nä), Giuseppe, an Italian patriot, journalist and historical writer, born at Messina in 1815; died in 1863. He took part in the revolution of 1848, and subsequently coöperated with Cavour and Garibaldi. He wrote *Souvenirs of Rome and Tuscany*, the *Revolution of Sicily*, etc.

La Fayette (lä-fä-yet), Marie Madelaine de la Vergne, Countess de, a French novelist, born in 1632; died in 1693. In 1655 she married Count Francis de La Fayette, and her house became a place of meeting for the most distinguished men of her time, including Rochefoucauld, Huet, Ménage, Lafontaine, etc. The most distinguished of her novels are *Zaïde*, *La Princesse de Clèves* and *La Princesse de Montpensier*.

Lafayette, Marie Paul Jean Roch Yves Gilbert Motier, Marquis de, was born in Auvergne in 1757; died in 1834. He commenced his career at the court of Louis XV, at the period when hostilities were commencing between Britain and her American colonies. In 1777 he left France for America, having fitted out a vessel for himself, and was received by Washington and his army with acclamations. He joined their ranks as a volunteer, was wounded near Philadelphia, and commanded the vanguard of the American army at the capture of Cornwallis. He returned to France on the close of the campaign; was called to the Assembly of the Notables in 1787, and was elected a member of the States-General, which took the name of *National Assembly* (1789). In the assembly he proposed a declaration of rights, and the decree providing for the responsibility of the officers of the crown. Two days after the attack on the Bastille he was appointed (July 15) commander-in-chief of the National Guards of Paris. It was through his means that the lives of the king and queen were saved from the mob

Marquis de Lafayette

that had taken possession of the palace at Versailles. After the adoption of the constitution of 1790 he resigned all command, and retired to his estate of La Grange. In 1792 he was appointed one of the three major-generals in the command of the French armies, and directed some small operations on the frontier of Flanders, at the same time striving unsuccessfully to defeat the Jacobins at Paris. Commissioners were sent to arrest him, on which he determined to leave the country, and take refuge in some neutral ground. Having been captured by an Austrian patrol, he was confined at Olmütz till 1797. After his return to his estate, he lived for many years without taking part in public affairs, and declining the dignity of senator offered him by Bonaparte, he gave his vote against the consulate for life. In 1818 he was chosen member of the Chamber of Deputies, and was a constant advocate of liberal measures. In 1824 he visited the United States, and was received with great enthusiasm. Congress voted him $200,000 and a township of land. During the revolution of July, 1830, he was appointed general of the National Guards of Paris, and it was chiefly to Lafayette that Louis Philippe owed his elevation to the throne.

Lafayette, a city, capital of Tippecanoe County, Indiana, on

the Wabash River and Wabash and Erie Canal, and at the intersection of several railways, 63 miles northwest of Indianapolis. It is the seat of Purdue University, the State agricultural college. It has important pork-packing industries, is a large market for grain, and has active manufactures. Pop. 20,081.

Lafayette a town, capital of Lafayette County, Louisiana, on the Vermilion River, 144 miles w. of New Orleans. It has cotton and cottonseed-oil industries and a sugar refinery. Pop. 6392.

Lafayette College, a flourishing institution at Easton, Pennsylvania, chartered in 1826. It has six degree courses of four years each—three general and scientific, and three technical. Its endowment amounts to about $800,000.

Lafitte (la-fēt), JACQUES, a French financier and statesman, born at Bayonne in 1767; died in 1844. He acquired a fortune by banking and was entrusted with the private property of both Napoleon and Louis XVIII. He took an active part in the revolution of July, 1830, was made minister of finance and president of the council, in which situation he remained until March 14, 1831. He lost his fortune in the crisis which followed, but a national subscription in 183[illegible] relieved him from embarrassment.

Lafitte, JEAN, a French privateer, born about 1780, who about 181[illegible] became the leader of a band of pirates established at Grande Terre, in Batavia Bay, on the coast of Louisiana, and plied his art in the Gulf of Mexico. In 1814, when the British fleet entered the Gulf for an attack on New Orleans, Lafitte was offered a large sum and a commission in the navy if he would aid in the attack. He refused and gave his aid to General Jackson in the defense, on condition of pardon to himself and followers. He subsequently reëngaged in piracy, but nothing is known of the time or cause of his death. His exploits have given rise to several tales and romances.

La Follette, ROBERT MARION, statesman, born at Primrose, Wisconsin, in 1855. He studied at the University of Wisconsin, was admitted to the bar in 1880, and was a Republican member of Congress from 1885 to 1891. He took a prominent part in framing the McKinley tariff bill. He was elected Governor of Wisconsin in 1900, and was reëlected in 1902 and 1904, resigning in 1905 to become United States Senator. He became active in reform measures, and rose to be the leading spirit in the 'Insurgent' movement in Congress. His action was strongly sustained by the popular vote reëlecting him to the Senate in November, 1910. He vigorously opposed the bill for reciprocity in trade with Canada in 1911. In 1908 he received 25 votes for the presidential nomination, and in 1912 was prominent as a candidate of the 'progressive' Republicans.

Lafontaine (lä-fon-tän), JEAN DE, a French writer, born at Château-Thierry in 1621; died in 1695. He was invited to Paris by the Duchess de Bouillon, and after being patronized by several persons of distinction Madame Sablière took him into her house, and freed him from domestic cares. He was in habits of intimacy with Molière, Boileau, Racine, and all the first wits of Paris, by whom he was much beloved for the candor and simplicity of his character. But he was no favorite with Louis XIV, who even hesitated some time to confirm his nomination to the French Academy. The first volume of his *Contes* or *Tales* appeared in 1664, a second in 1671. They are full of fine touches of genius, but are grossly indecent. Of his *Fables* (in which animals are represented speaking and acting) innumerable editions have been printed, and it is through them that he is universally known. Lafontaine is also the author of *Les Amours de Psyché*, a romance; *Le Florentin* and *L'Eunuque*, comedies; *Anacreontiques*, etc.

Lager Beer (läg'ēr), a light beer, not so intoxicating as the English pale ales, largely brewed in Germany and Austria. It was also made in America prior to 1919 (see *Brewing*).

Lagerlöf (läg'er-löf), SELMA, a Swedish author, born at Marbakaford in 1858. She became a teacher and in 1891 published a collection of tales, *Gästa Berlings Saga*, followed in 1897 by her great romance, *The Miracles of Antichrist*. These were so brilliant in style and character as to win her a foremost place among recent Scandinavian writers. She has since published various other works, and in 1909 was awarded the Nobel prize for literature.

Lagerstœmia. See *Bloodwood*.

Lago Maggiore (mä-jō're; anciently *Verbānus*), a lake partly in Northern Italy, partly in Switzerland, about 39 miles long and 7 broad, traversed by the Ticino. It is 621 feet above the level of the sea, and at the northern end in some places as deep as 2500 feet. Its banks abound in every Alpine beauty, and are adorned with a number of picturesquely situated villages and towns. On all sides it is

surrounded by hills, and it contains several islands. See *Borromean Islands.*

Lagomys (la-gō'mis), the generic name of the Calling Hares, or Pikas. See *Pika.*

Lagoon (la-gōn'), a name given particularly to shallow lakes connected with the sea, which are found along some low-lying coasts, as on that of the Adriatic near Venice.

Lagos (lä'gōsh), a seaport town in the south of Portugal, province of Algarve. Pop. 8291.

Lagos (lä'gōs), a British colony on the Bight of Benin, Guinea coast, W. Africa. Area, about 27,000 sq. miles, pop. about 1,750,000. Lagos, the capital, is an important place for commerce, as it is the only point of communication with the outer world for an extensive and fruitful district of the interior. The chief article of commerce is palm-oil. It has a population of 41,874. Acquired by Britain in 1861, Lagos and the Gold Coast were for some time under one governor; but in 1886 Lagos was put under an independent administrator of its own.

La Grange, a city, capital of Troup County, Georgia, 15 miles N. E. of West Point. It has large cotton mills, a large flour mill, and other industries. Pop. 5587.

La Grange, a village in Cook County, Illinois, 14 miles S. W. of Chicago, for which it is a suburban residence town. Pop. 5282.

Lagrange (lä-grānsh), Joseph Louis, a celebrated mathematician, was born at Turin in 1736; died at Paris in 1813. He was of French origin, and his great-grandfather was a cavalry officer in the French army, who afterwards passed into the service of Sardinia, where he early displayed a natural taste for mathematics. When scarcely nineteen years of age Lagrange was made mathematical professor in the artillery school at Turin. In 1764 he obtained the prize of the Academy of Sciences in Paris for a treatise on the libration of the moon, and in 1766 for another on the theory of the satellites of Jupiter. About this time he made a visit to Paris, where he became personally acquainted with D'Alembert, Clairaut, Condorcet and other savants. Soon after his return he received an invitation from Frederick the Great, to whom he had been recommended by D'Alembert, to go to Berlin, with the title of Director of the Academy. Here he lived for twenty years, and wrote his great work *La Mécanique Analytique.* After Frederick's death (1786) the persuasion of Mirabeau and the offer of a pension induced him to settle in Paris. He took no active part in the revolution, and the law for the banishment of foreigners was not put in force against him. In 1794 he was appointed professor in the newly-established Normal School (Ecole Normale Supérieure) at Paris, as well as in the Ecole Polytechnique. The most important of his works are his *Mécanique Analytique, Théorie des Fonctions Analytiques, Leçons sur le Calcul des Fonctions.*

Laguna (la-gō'nä), a province in the center of Luzon I., Philippines, on Laguna Bay. It is mountainous in the N. but more level in the S., where much rice, tobacco, indigo, coffee, cocoa, and sugar are raised. The capital is Santa Cruz, at the mouth of the Santa Cruz River. The inhabitants (Tagalogs) are civilized. The area is 752 square miles, and the population about 177,000. Laguna, the former capital of Teneriffe I., Canaries, is situated 4 miles N. by W. of Santa Cruz. Oranges, raisins, wheat, and tobacco are produced. Pop. 13,000.

La Guayra. See *Guayra.*

La Harpe (lä ärp), Jean François de, a French dramatic poet, critic and philosopher, born at Paris in 1739; died in 1803. He formed a close friendship with Voltaire, whose style he imitated in his numerous dramas, eulogies, etc. About 1786 he began to lecture at the Lycée on literature. On the breaking out of the revolution, La Harpe embraced the principles of republicanism; but during the reign of terror, his moderation rendering him an object of suspicion, he was in 1793 thrown into prison, where his ideas underwent a complete change. After being restored to liberty he continued his lectures and collected them into a separate work (*Lycée ou Cours de Littérature Ancienne et Moderne*), which constitutes his most durable title to fame.

Laharpur (la-här-pōr'), a town of India, in Oudh, 17 miles N. of Sitapur. Pop. about 12,000.

La Hogue (lä og), a cape of northern France, forming the point of the peninsula on which is Cherbourg, department of La Manche. A naval battle was fought here, May 19, between the French under Tourville and the British and Dutch under Admirals Russell and Rooke, in which the latter were victorious.

Lahore (lä-hōr'), a city of Hindustan, capital of the Punjab, and administrative headquarters of Lahore division and district, on the left bank of the Ravi, 265 miles northwest of Delhi.

It covers an area of 640 acres, and is surrounded by a brick wall 16 feet high, flanked by bastions. The streets are extremely narrow, unpaved and dirty; and the houses have in general a mean appearance. The most remarkable buildings are the mosques of Aurengzebe, of Visier Khan and of Sonara; the mausoleum of Runjeet Singh, etc. The European quarter lies outside the walls on the south, and dates from 1849. Among the public buildings and institutions are the Punjab University, the Oriental College, Medical School, Law School, Mayo Hospital, etc. In 1524 Lahore became the seat of the Mogul empire, under which it reached its greatest splendor. Before passing into the hands of the British it was the capital of the Sikhs. Pop. (1911) 228,687.

Lahr (lär), a town of Baden, 53 miles s. s. w. of Carlsruhe; manufactures textile fabrics, leather, etc. Pop. 13,577.

Lahsa. See *El Hasa.*

Laibach, or LAYBACH (lī'bäk), a town of Austria, duchy of Carniola, of which it is the capital. It is situated 35 miles northeast of Trieste, on both sides of the river of the same name. Its principal buildings are the Cathedral of St. Nicholas, with fine pictures, frescoes, and carvings; the old Gothic town house; the old castle; the lyceum and other educational institutions. It manufactures woolen and cotton goods, paper, etc. Pop. (1910) 47,127.

Laing (läng), ALEXANDER GORDON, an African traveler, born at Edinburgh in 1793; murdered in 1826. After serving in the army and attaining the rank of major, he entered in 1822 on his career as an African traveler. The results of his early journeys in West Africa were published in 1825. He explored the upper course of the Niger River, and while doing so, was assassinated by his guide near Timbuctoo.

Laing, DAVID, a Scottish antiquary, born in Edinburgh in 1792; died in 1878. He became secretary of the Bannatyne Club, a position which he retained during the 38 years of the society's existence. All the publications of the club came under his superintendence, and in not a few cases he was the actual editor. In 1837 he was appointed librarian to the Society of Writers to the Signet, an office which he held till his death. He was in turn treasurer, secretary, vice-president, and foreign secretary to the Scottish Society of Antiquaries. He published the works of John Knox, with valuable notes; *Select Remains of the Early Popular Poetry of Scotland;* editions of Dunbar's, Henryson's and Sir David Lyndsay's poems; Wyntoun's *Orenykill*, etc., besides editing several of the publications of the Abbotsford and Spalding clubs, and of the Shakespere and Woodrow societies.

Laing, MALCOLM, a Scottish historian, born in 1762; died in 1818. He was called to the Edinburgh bar in 1786. His best known work is the *History of Scotland from the Accession of James VI to the Reign of Queen Anne,* with a dissertation proving the participation of Mary Queen of Scots in the murder of Darnley.

Laissez-faire (lā-sā-fär), in economics, a term applied to the theory that a public authority should interfere in the concerns of a community as little as possible; that wealth tends to be produced most amply and economically where a government leaves individuals free to produce and transfer on mutually arranged terms, confining itself to the protection of property and person and the enforcement of contracts. This rule in practice is limited by various exceptions, as in government interference in the matters of education and the employment of children; in the promotion of health or morality; and in the private economic interests of certain industrial classes.

Laius. See *Œdipus.*

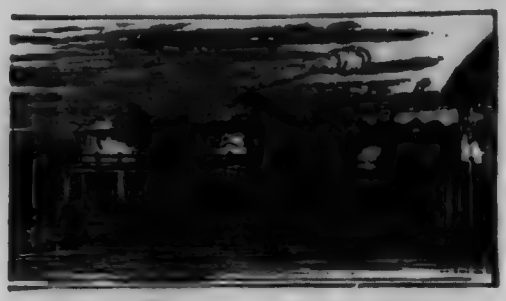
Lake (lāk), a large sheet or body of water, wholly surrounded by land, and having no direct or immediate communication with the ocean, or with any seas, or having so only by means of rivers. It differs from a pond in being larger. Lakes are divided into four classes: (1) Those which have no outlet, and receive no running water, usually very small. (2) Those which have an outlet, but receive no superficial running waters and are consequently fed by springs. (3) Those which receive and discharge streams of water (by far the most numerous class). (4) Those which receive streams, and which have no visible outlet, being generally salt, as the Caspian Sea and Lake Aral.

Lake Charles, a town, capital of Calcasieu parish, Louisiana, on a river and lake of its own name, 219 miles w. of New Orleans. It has several sawmills and other industries. Pop. 17,000.

Lake City, a city, county seat of Columbia County, Florida, 60 miles w. of Jacksonville, in center of Long Island Cotton Belt, with trucking and other industries, including lumber and turpentine. Pop. 7150.

Lake, Gerard, Viscount, a British general, born in 1744; died in 1808. He entered the army in 1758, and served in the Seven Years' war, in America in 1781, and in Holland 1793-94. He attained the rank of general, and was commander-in-chief in Ireland during the trouble of 1797-98, and in India during the Mahratta war (1803), which he brought to a brilliant conclusion. He defeated Holkar in 1805, returned to England in 1807, was made viscount, and appointed governor of Plymouth, where he died.

Lake Dwellings, the name given to habitations built on small artificial or partly artificial islands in lakes, or on platforms supported by piles near the shores of lakes. The use of habitations of this nature is a subject which has engaged the attention of archæologists and others very largely since the discovery of the remains of a lake-dwelling in Ireland in 1839, of similar ones in Switzerland in 1854, and subsequently of numbers of others elsewhere. The archæological interest thus attaching to these lacustrine remains has drawn attention to the fact of similar dwellings being still used in various parts of the world, in Russia, the Malay Archipelago (Borneo and New Guinea), the Caroline Islands, Lake Maracaybo in Venezuela, New Zealand, and in a modified form in some parts of Central Africa. The first who is known to have described lake dwellings is Herodotus, who mentions certain dwellings of this kind on Lake Prasias in Thrace as being approached by a narrow bridge, each habitation having a trapdoor in the floor, giving access to the water beneath, through which fish were caught. A great number of these *pfahlbauten* (pile structures) have been discovered in the Swiss lakes, some belonging to the iron age, some few even to Roman times, but the greater number appearing to be divided in about equal proportions between the stone and bronze ages. The Celtic lake dwellings, called *crannoges*, are more or less artificial islands composed of earth and stones strengthened by piles. Those of Ireland are of a much later date than those of Switzerland, and are frequently noticed in early history as strongholds of petty chiefs. Similar structures are not infrequent in Scotland. The relics found in these buildings have thrown much light on prehistoric man, large populations having occupied these pile-buildings during extended periods of time. Dr. Keller of Zurich first described the lake-dwellings of the European Continent, his work being translated into English under the title of *Lake Dwellings of Switzerland and other Parts of Europe*, by J. E. Lee, 1878. The crannoges of Ireland and Scotland are described in the proceedings of the Royal Irish Academy and the Society of the Antiquaries of Scotland.



Lake-dwellings (restored).—From Troyon.

Lake of the Thousand Islands an expansion of the river St. Lawrence, soon after it leaves Lake Ontario, between Canada and the State of New York. It contains in all about 1700 small islands.

Lake of the Woods, a lake on the southern frontier of British America, and partly within the United States territory, 220 miles west of Lake Superior. It is upwards of 70 miles in length, has an extremely irregular form, and a coastline of about 250 miles. It is studded with numerous wooded islands. Rainy River, the principal feeder of the lake, enters it at its southeastern extremity; its discharge is at the north by the River Winnipeg.

Lakes, pigments consisting of a coloring matter combined with a metallic oxide. They are obtained by mixing with a solution of the coloring matter a solution of alum or of a salt of tin, tungsten, zinc, lead, or other metal, and then adding an alkali or alkaline carbonate. Among the pigments prepared in this way may be mentioned *blue* lake, consisting of cobalt blue, indigo, or ultramarine and alumina; *madder* lake, of madder and alumina; *orange* lake, of turmeric and alumina; *carmine* lake, of cochineal and alumina; *purple* lake, of logwood and alumina; and so on. Lake pigments are used in painting, calico-printing, and in the manufacture of wall-paper.

Lake School, or Lake Poets, a name given by the *Edinburgh Review* to Wordsworth, Southey, Coleridge, Wilson, etc. They had little in common except their non-classicism, and received the name from residing in

the Westmoreland and Cumberland Lake District.

Lakewood, village of Cuyahoga Co., Ohio, 7 miles s. w. of Cleveland, of which it is a residential suburb. Pop. (1910) 10,181.

Lakewood, village of Ocean County, N. J., 59 miles s. w. of New York City, in the pine district, a well-known health resort. Pop. 5149.

Lakhimpur (lak-him-pōr'), a British district of India, occupying the extreme eastern portion of Assam; area, 3724 sq. miles; a great tea-growing district. Pop. 375,000.

Lakshmi (luksh'mē), in Hindu mythology, the wife of Vishnu. She sprang in full perfection from the froth of the ocean. She is the Hindu Venus, the Ceres or goddess of abundance, and the goddess of prosperity. Flowers and grain are the offerings most commonly given to her.

Lalande (là-lānd), JOSEPH JÉRÔME LE FRANÇAIS DE, a French astronomer, born at Bourg-en-Bresse, dep. of Ain, in 1732; died at Paris in 1807. He devoted himself to mathematics and astronomy, and was sent by the academy in 1751 to Berlin to determine the parallax of the moon, while Lacaille went with the same object to the Cape of Good Hope. After having finished his operations at Berlin, he was chosen member of the Academy of Sciences in Paris in the year 1753. Thenceforward no volume of their *Transactions* appeared which did not contain some important communications from him. In 1762 he was appointed professor of astronomy in the Collège de France, where he lectured with immense success to the end of his life. His chief works are his *Treatise on Astronomy; History, Theory and Practice of Navigation;* and *Astronomical Bibliography.* He wrote all the astronomical articles for the great *Encyclopédie,* and rewrote them for the *Encyclopédie Méthodique,* and contributed to various scientific periodicals, besides editing the *Connaissance des Temps* from 1760 to 1775, and from 1794 till his death.

Lalita-Patan (lăl'i-tă-pă'tăn), a town in Northern Hindustan, in Nepaul, near the south bank of the Baghmati, and two miles s. s. w. from Khatmandu, with which it is connected by a bridged road. It is an old place, and contains many Buddhist temples. Pop. 24,000.

Lally-Tollendal (la-le'-tol-en-dal), THOMAS ARTHUR, COMTE, born in Dauphiné in 1702, of Irish parents, his father having followed the fortunes of James II. Trained to arms, he was made brigadier on the field of Fontenoy for distinguished bravery. He accompanied the Pretender to Scotland in 1745, and in 1756 he was selected to restore the French influence in India, for which purpose he was made governor of Pondicherry. He utterly failed in this, surrendered Pondicherry in 1761, and was brought prisoner to England. The following month he was allowed to return to France, where, after a long imprisonment, he was condemned and executed (1766) for treachery, etc. His son, supported by Voltaire, obtained in 1778 a complete authoritative vindication of his father's conduct.

Lalo. See *Baobab.*

Lama, in zoology. See *Llama.*

Lamaism (lä'ma-ism), a variety of Buddhism, dating from the seventh century after Christ, and chiefly prevailing in Tibet and Mongolia; so called from the *lamas* or priests belonging to it. The highest object of worship is Buddha, who is regarded as the founder of the religion, and the first in rank among the saints. The other saints comprise all those recognized in Buddhism, besides hosts of religious teachers and pious men canonized after their death. The clergy are the representatives or reincarnations of these saints on earth, and receive the homage due to them. Besides these saints a number of inferior gods or spirits are recognized by Lamaism and receive a certain worship. The Lamaists have a hierarchy in some respects resembling that of the Roman Catholic Church, and they have also monasteries and nunneries, auricular confession, litanies, etc., and believe in the intercession of the saints and in the saying of masses for the dead. In the hierarchy there are two supreme heads, the *Dalai-lama* and the *Tesho-lama,* in whom Buddha is supposed to be incarnate. Next in rank to these two grand-lamas are the incarnations of saints, after which follow those of patrons or founders of lamaseries, or Buddhistic monasteries, and then the

Lama of Tibet.

lower ranks, distinguished merely by talents or learning. The *Dalai-lama* and *Tesho-lama* are nominally co-equal in rank and authority; but the former from possessing a much larger territory is in reality much the more powerful. The former, whose residence is at Potala, near Lassa, is the acknowledged head of the Buddhists not only in Tibet, but throughout Mongolia and China. When either of the two lamas dies, his place may be filled according to directions given by himself before his death, stating into what family he purposed transmigrating. The present lama, infected by political ambition, sought to usurp the sovereignty of Tibet. In consequence, early in 1910, a force of Chinese troops was sent to arrest him and he was forced to flee, taking refuge in British India, where he now holds his court.

Lamar (la-mar'), LUCIUS QUINTUS CINCINNATUS, jurist, was born in Putnam County, Georgia, in 1825. Admitted to the bar in 1847, he served two terms as congressman from Mississippi (1856-1860). In 1861, after taking part in the secession convention of Mississippi, he was sent to represent the Confederate cause in Europe. After the war he was professor of political economy and law professor in the University of Mississippi, and afterwards served in both Houses of Congress, manifesting a fraternal feeling towards the North that attracted general attention. In 1885 he was appointed Secretary of the Interior and in 1887 was made a justice of the Supreme Court. He died in 1893.

Lamarck (là-mârk'), JEAN BAPTISTE PIERRE ANTOINE DE MONET, CHEVALIER DE, a French naturalist, born in Picardy in 1744; died at Paris in 1829. He devoted himself to the study of medicine and physical science. Among his chief works are *Philosophie Zoologique*, in which he promulgated a famous theory foreshadowing what is now known as the law of evolution; *Histoire Naturelle des Animaux sans Vertebres*, *Tableau Encyclopédique de la Botanique*, etc. His religious beliefs have been described as a curious mixture of pantheism and deism.

Lamarmora (la-mar'mo-ra), ALFONSO, MARQUIS, an Italian soldier and statesman, born in 1804; died in 1878. He left the military academy of Turin in 1823, and thenceforward devoted himself to army reform. He was engaged in checking the revolutionary movements of 1848, and soon after became minister of war. In 1854 he commanded the Sardinian troops in the Crimea. He accompanied Victor Emmanuel to the field in 1859 against Austria, and after the peace became president of the council. He was ambassador to Prussia in 1861, to France in 1867, and was governor of Rome 1870-71.—His elder brother, ALBERTO COUNT LAMARMORA, born in 1789; died in 1863, entered the French army, and was military governor of the island of Sardinia. He published an important account of the island.

Lamartine (là-mar-tēn), ALPHONSE MARIE LOUIS PRAT DE, a French poet and statesman, was born at Mâcon in 1790; died in 1869. After being educated at the Jesuit school at Belley he spent some years in the country and in traveling, without any definite occupation, devoting himself chiefly to poetry. By his first production, *Méditations Poétiques* (1820), he at once obtained a high place among the poets of the day. In 1820 he was attached to the legation at Naples, and married a rich English lady, Eliza Marianna Birch. The *Nouvelles Méditations Poétiques* (1823) and the *Harmonies Poétiques et Religieuses* (1828), established his poetic fame, and obtained from him admission into the French Academy (1830). After the revolution of July he traveled in the East, and on his return published *Voyage en Orient*, *Souvenirs, Impressions, Pensées et Paysages* (Paris, four vols., 1835). During his absence he had been elected a member of the Chamber of Deputies, and thenceforward his career was as much political as literary. In 1847 he published his *Histoire des Girondins* (Paris, eight vols.), in which he manifested strong republican leanings. After the February revolution of 1848 he became a member of the provisional government in the capacity of minister of foreign affairs. For some months he enjoyed unbounded popularity, and his energetic behavior was on more than one occasion the means of averting serious evils. After the insurrection of June, 1848, he lost his popularity, and in 1851 withdrew from public life. He was in later years much impoverished, and was voted an annuity in 1867. Among his later works, which did not add to his reputation, were *Histoire de la Restauration; Histoire de Turquie; Histoire de Russie; Le Conseiller de Peuple; Le Civilisateur; Esprit de Mme. de Girardin; Shakespere et son Œuvre; Vie de Tasse.* His *Mémoires* appeared in 1871.

Lamb, CHARLES, an English essayist and humorist, born in London in 1775; died at Edmonton in 1834. He was the son of a clerk to one of the benchers of the Inner Temple, and was educated at Christ's Hospital, where he formed his long friendship with Coleridge.

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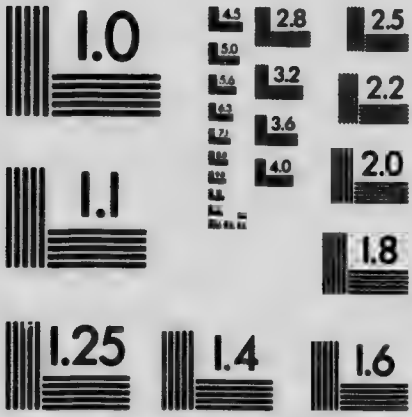

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On leaving the hospital he was employed for a short time in the South Sea House, from which he removed in 1792 to an appointment in the accountant's office of the East India Company. Here he remained till 1825, when he was permitted to retire on a pension of £450. The whole course of his domestic life was devoted to the safekeeping and care of his sister Mary, who in a fit of acute mania had stabbed her mother to the heart in 1796. His first appearance as an author was in 1798, when he published a volume of poems in conjunction with his friends Coleridge and Lloyd. His love for seventeenth century literature bore fruit in the *Tales from Shakespere* (1807) and *Specimens of English Dramatic Poets* who lived about the time of Shakespere (1808). He made two attempts at the drama: *John Woodvil*, written in imitation of the early English dramatists; and a farce entitled *Mr. H.*, which was performed at Drury Lane in 1806, and proved a failure. On the other hand, his tale of *Rosamund Gray* (London, 1798) was well received when it appeared, and is still a favorite. He owes his literary distinction to his delightful *Essays of Elia*, chiefly contributed to the *London Magazine*. They have been frequently republished in a collected form. Here, in a style ever happy and original, he has carried the short humorous essay to a point of excellence perhaps never before attained. His sister, MARY ANNE (born in 1765; died in 1847), was joint author with her brother of *Mrs. Leicester's School*, *Tales from Shakespere* and *Poetry for Children*.

Lamb, ISAAC WIXAN, inventor, born at Salem, Michigan, in 1840. His principal invention is a knitting machine capable of producing more than 30 varieties of knit goods and of making 4000 loops a minute at ordinary speed. It can make both flat and tubular work.

Lamballe (lon-bal'), MARIA THERESA LOUISA DE SAVOIE-CARIGNAN, PRINCESS DE, was born at Turin in 1749, and married to the Prince de Lamballe, who died the next year. She was the devoted friend and companion of Marie Antoinette, whose sufferings she shared till September 3, 1792, when she was cruelly murdered.

Lambayeque (lam-bä-yä'kä), a town in Peru, capital of the department of the same name, 6 miles from the sea, on the river Lambayeque. Pop. 10,500. Area of department, 4614 square miles; pop. (1906) 93,070.

Lambert (lam'bert), DANIEL, noted for his extraordinary size, was born in Leicester in 1770; died in 1809. He was exhibited in London and the principal towns of England, and at the time of his death was 5 feet 11 inches in height, weighed 739 lbs. (over 52½ stone), and measured 9 feet 4 inches round the body, and 3 feet 1 inch round the leg.

Lambert, JOHN, parliamentary general during the English civil war; born at Kirkby Malhamdale, Yorkshire, in 1619; died at Guernsey in 1692. He joined the parliamentary army under Fairfax, was colonel at Marston Moor, and major-general in the war in Scotland. He took the lead in the council of officers who gave the protectorate to Cromwell, but he afterwards fell into disgrace, and was deprived by Cromwell of all his commissions, though a pension of £2000 was allowed him for past services. He headed the confederacy which deposed Richard Cromwell, and in 1660 set out for the north to encounter Monk, but was deserted by his troops, seized, and committed to the Tower. At the Restoration he was excepted from the act of indemnity, brought to trial, and condemned to death, but had his sentence commuted to banishment to Guernsey.

Lambert's Pine (*Pinus Lambertiana*), a N. American pine growing in California, and sometimes reaching the height of 300 feet. It yields when burned a sugary substance known as California manna. The leaves are in fives; the cones are 14 to 18 inches long, and contain edible seeds.

Lambese (lom-bes'), a town of Algeria, department of and 62 miles s. w. of the town of Constantine. It is the site of the ancient Lambæsa, and has important Roman remains.

Lambeth (lam'beth), a parliamentary borough of South London, opposite to Westminster, with which it is connected by a bridge 1040 feet long. It has recently become famous for its potteries. Lambeth Palace, the official residence of the Archbishops of Canterbury, contains a library with 30,000 volumes and upwards of 14,000 manuscripts. St. Thomas' Hospital is situated on the Albert Embankment, opposite the Houses of Parliament. The borough is divided into four parliamentary divisions, North, Kennington, Brixton and Norwood. Pop. (1911) 298,120.

Lambeth Articles, a series of nine articles drawn up by Archbishop Whitgift in 1595, embracing the most pronounced doctrines of Calvinism. They were rejected by the queen and parliament, and again at the Hampton Conference, 1604.

Lamego (la-mä'gö), a city of Portugal, in Beira, in a plain near

the Douro, 42 miles east of Oporto. It has an old Gothic cathedral. Pop. 9471.

Lamellibranchiata (la-mel'i-brang-ki-ā'ta), a division of the higher mollusca, represented by the oysters, mussels, cockles, etc., which are distinguished by the possession of a bivalve shell, the absence of a distinct head, and the presence of four lamellar or plate-like gills (whence the name).

Lamellirostres (la-mel-i-ros'tres), a family of swimming birds, distinguished by the flat form of the bill, which is invested by a soft skin, and provided at the edges with a set of transverse plates or 'lamellæ,' through which the mud, in which those birds grope for food, is sifted or strained. The family comprises the ducks, geese, swans, flamingoes, etc.

Lamennais (lā-men-ā), Hugues Félicité Robert de, a French writer on religion and politics, born at St. Malo in 1782; died in 1854. He was ordained priest in 1816, and first attracted attention by his apology for Roman Catholicism, the *Essai sur l'Indifférence en Matière de Religion*. In 1824 he declined the offer of a cardinal's hat, and the following year published a work favoring ultramontane doctrines, *La Religion Considérée dans ses Rapports avec l'Ordre Civil et Politique*. From this time he began to preach the separation of church and state, as he believed he could only deliver the former by freeing it from the yoke of the latter. On the outbreak of the July days of 1830 he became a convert to the dogma of the sovereignty of the people. In September of that year he began to publish his *L'Avenir*, which had for its motto, 'God and Freedom.' This journal, which advocated religious and political reforms, was in 1832 condemned by the pope and suppressed. In 1834 he finally revolted from Rome in his *Paroles d'un Croyant* ('Words of a Believer'). This book, which produced an almost unexampled sensation, passed in a few years through more than 100 editions, was translated into almost all living languages, and reprinted in almost all foreign countries. It was condemned by the pope, and Lamennais answered by the *Affaires de Rome*. His subsequent works were all extremely democratic, and he gradually became both atheist and socialist. At the revolution of 1848 he became a member of the national assembly, but after the *coup d'état* he lived in strict retirement.

Lamentations (la-men-tā'shuns), the name given in the authorized version of the Scriptures to a pathetic poem made up of five distinct elegies. They appear in the Hebrew canon with no name attached, but ancient tradition, internal evidence, and a prefatory verse which appears in the Septuagint point to the authorship of Jeremiah. The first four of the dirges are alphabetical acrostics, successive verses, or in chap. iii, successive sets of three verses, beginning alphabetically. Chap. v is not in acrostic form. According to Josephus, Jerome, and also some modern critics, these poems were written on the death of King Josiah (see II Chron., xxxv, 25), but the contents of the book itself plainly show that a national calamity—the destruction of Jerusalem and the overthrow of the Judean state by the Chaldeans—is referred to.

Lamiaceæ (la-mi-ā'se-ē), a synonym of Labiatæ. See *Labiatæ*.

Laminaria (lam-i-nā'ri-a), a genus of dark-spored sea-weeds, having no definite leaves, but a plain ribless expansion, which is either simple or cloven. *L. digitāta* is the well-known tangle on the shores of Great Britain.

Lamination (lam-i-nā'shun), the arrangement of rocks in thin layers or laminæ. This arrangement prevails amongst all the varieties of gneiss, mica, schist, chlorite schist, hornblende schist, etc.

Lammas (lam'mes), one of the four quarterly term days in Scotland, occurring on August 1. The name is from the A.-Sax. *hlāf-mæsse*, that is, *loaf-mass*, bread-feast; so called because on this day offerings were formerly made of the first-fruits of harvest.

Lämmergeier (lam'ér-gī-ér; German, 'lamb vulture'), the bearded vulture, a bird of prey of the genus *Gypaëtos* (*G. barbātus*), family Vulturidæ, forming a link between the vultures and the eagles. It

Lämmergeier (*Gypaëtos barbātus*).

inhabits the Swiss and German Alps, as well as the higher mountains of Asia and Africa, and is the largest European bird of prey, measuring upwards of 4 feet from beak to tail, and 9 or 10 in the expanse of its wings. Besides eating carrion, it preys on living chamois, lambs, kids, hares, and such like animals, but when hungry it does not disdain rats, mice and other small quadrupeds.

Lammermuir Hills, a range of Scottish hills stretching in a generally eastward direction from S. E. Midlothian to the German Ocean at St. Abb's Head, and forming part of the boundary between Berwick and Haddington shires. Highest summit Lammer Law, 1733 feet.

Lamnidæ (lam'ni-dē), the porbeagles, a family of sharks.

Lamont (la'mont), DANIEL SCOTT, cabinet official, born at Cortlandville, New York, in 1851; died in 1904. He engaged in journalism, was private secretary to President Cleveland 1885-89, and Secretary of War 1893-97. He then became vice-president of the Northern Pacific R. R. Co.

La Motte (la-mot), JEANNE DE VALOIS, COMTESSE DE, a French adventuress, a descendant of the family of Valois by an illegitimate child of Henry II, and notorious for the part she played in the 'diamond necklace' fraud; born in 1756; died in 1791. She married the Comte de la Motte, a penniless adventurer, and settled in Paris about 1780. In the years 1783-84 the Prince-cardinal de Rohan, who had fallen into disgrace, was persuaded by her that the Queen Marie Antoinette regarded him with much favor, which would be increased if he would assist her in purchasing a valuable diamond necklace which Louis XV had ordered for Madame du Barry, but which was still in the jeweler's hands. The cardinal fell into the snare, he agreed to stand surety for the payment, and the necklace was delivered to him. There is here yet somewhat of mystery. Cagliostro, and probably the queen also, was in the plot; the necklace disappeared, was broken up and sold, probably by the La Mottes. The jeweler, after waiting a long time for his money, applied direct to the court, and the plot was discovered. Cagliostro, the cardinal, and others were thrown into the Bastille, but at the trial only the La Mottes were convicted. They escaped to England, where the comtesse wrote *Mémoires* implicating the queen in the fraud. She was killed by falling out of a window. Her husband lived a miserable wandering life till his death in 1831.

La Motte Fouqué (fō-kā). See *Fouqué.*

Lamp, a contrivance for producing artificial light, whether by means of an inflammable liquid, or of gas, or electricity; but usually the term applied to a vessel for containing oil or other liquid inflammable substance, to be burned by means of a wick. Baked earth was probably the substance of which the earliest lamps were composed, but subsequently we find them of various metals—of bronze more particularly. Modern lamps vary in form and principle widely, and of late have been constructed in a variety of materials. The requisite properties of a perfect lamp are these:—1. It must be supplied with carbonaceous matter and with oxygen. 2. It must convert the former into a gaseous state. 3. It must bring the gas so produced in contact with oxygen at such a temperature that the carbon will combine with the oxygen in the fullest degree to produce the greatest quantity of flame without any smoke. Until 1784 all the lamps in use were far from meeting all these requirements. In that year an improved scientific lamp was constructed by Aimé Argand of Geneva, and called, after him, the Argand lamp. In this lamp defective consumption is remedied by using a circular wick, the flame of which is nourished by an internal as well as an external current of air, and by placing a glass chimney above the flame so as to increase the draught. A special arrangement ensures a uniform supply of oil. In the improved lamps that have succeeded that of Argand, the Argand burner has generally been retained, and the alterations have chiefly been made in the mode of keeping up a uniform supply of oil. The moderator lamp, invented by M. Franchot in 1837, long held a favorite place. In it the oil is contained in a reservoir at the bottom of the lamp. The reservoir is cylindrical in shape, and in the interior there is a piston which is pushed down on the oil by a spiral spring, causing the oil to ascend in the tube in which the wick is inserted. Since the invention of this lamp various modifications have been made in it by different manufacturers. For petroleum, paraffin and other mineral oils, which have of late years come into very extensive use for illuminating purposes, a very simple kind of lamp is used. The oil-vessel is placed below the burner, which usually consists of a simple slit, down which a broad wick passes into the oil. The wick may be raised or depressed by a screw, and when the lamp is burning is kept a short distance below the opening of the slit. The

oil is sucked up by the wick by the action of capillarity. A chimney is fitted on to the lamp, and creates so powerful a draft that the flame is kept perfectly steady, and the gas proceeding from the heating of the oil is completely consumed. There is an endless variety of lamps of this kind, the special features aimed at being increase of light by improved burners and immunity from explosion. Safety-lamps are used for mines (see *Safety-lamp*). Hydrocarbon lamps are used for magic lanterns, etc. The magnesium lamp, chiefly used by photographers, is one constructed for the combustion of magnesium wire. A *lantern* is a form of lamp, generally a case enclosing a light and protecting it from wind and rain, sometimes portable and sometimes fixed.

Lampblack, a fine soot formed by the condensation of the smoke of burning oil, pitch, or resinous substances in a chimney terminating in a cone of cloth. It is used in the manufacture of pigments, blacking and printing inks. See *Carbon*.

Lampedusa (lăm'pā-dō'sà), a small island of the Mediterranean, about midway between Sicily and the coast of Tunis. It is about 13 miles in circumference; produces wine and fruits; has a small harbor, and 1074 inhabitants. It belongs to Italy.

Lamprey (lam'pri), the popular name of several species of fishes forming the genus *Petromyzon* of the order Marsipobranchii; eel-like, scaleless fishes which inhabit both fresh and

Sea Lamprey (*Petromyzon marinus*).

salt water. The lampreys have seven spiracles or apertures on each side of the neck, and a fistula or aperture on the top of the head; they have no pectoral or ventral fins. The mouth is in the form of a sucker, lined with strong teeth and cutting plates, and the river lampreys are often seen clinging to stones by it. The marine or sea lamprey (*P. marinus*) is sometimes found so large as to weigh 4 or 5 lbs. It is of a dusky brown, marbled with yellowish patches, is common round the Atlantic coast of Europe, and is also found in the Mediterranean. It ascends rivers in the spring for the purpose of spawning, and was formerly much valued as an article of food. The river lamprey or lempern (*P. fluviatilis*) is a smaller species, and abounds in the fresh-water lakes and rivers of northern countries. It is colored black on its upper and of a silvery hue on its under surface. Lampreys attach themselves to other fishes and suck their blood; they also eat soft animal matter of any kind.

Lamp-shells, the familiar designation of certain Brachiopodous Molluscs, especially those of the genus *Terebratŭla*, the bivalve shells of which when closed bear a close resemblance to the shape of the old Roman or classical lamp.

Lampyris (lam'pi-ris), the name of a genus to which the glow-worm belongs.

Lamu (lä-mō'), an island and town on the coast of East Africa, lat. 2° 20′ s., the administration of which was granted in 1889 to the Imperial British E. Africa Co. Pop. 15,000.

Lanark (lan'ark), LANARKSHIRE, or CLYDESDALE, an inland south-western county of Scotland, and the most populous in the country. Area, 879 square miles. The southern part is mountainous, the Lowther Hills reaching an elevation of 2400 feet. The mineral wealth consists of rich beds of coal, ironstone, limestone and sandstone, which are extensively wrought. The principal river is the Clyde, which traverses the entire county from S. S. E. to N. N. W., and for the greater part of its course nearly through its center. The county contains the large city of Glasgow. Pop. 1,339,327. —LANARK, the county town, situated on elevated ground near the right bank of the Clyde, 31 miles southeast of Glasgow. It is a very ancient place, and was erected into a royal burgh by Alexander I. Not far from Lanark are the Falls of the Clyde, in a romantic and richly wooded part of the valley, which render the town a favorite resort for tourists. Pop. 6440.

Lancashire (lan'kà-sher), or the county palatine of Lancaster, a maritime county in the N. W. of England, bounded by Westmoreland, Cumberland, Yorkshire, Cheshire and the Irish Sea, has an area of 1880 square miles. The coast is of great extent, and is deeply indented by bays and arms of the sea, the principal of which are Morecambe Bay and the estuary of the Ribble. In the north the surface is rugged and mountainous; elsewhere it is generally level. The peat-mosses or bogs of Lancashire form one of its most remarkable physical features. The most extensive of these is Chat Moss (which see). The most important mineral product of Lancashire is coal, which

occurs abundantly in the south and southwest. Another valuable product is the hæmatite iron ore, the output of which has increased with extraordinary rapidity of late years. Excellent freestone is quarried near Lancaster. Limestone occurs abundantly. Lancashire is the great seat of the cotton manufacture, not only of England, but also of the world, Manchester being the principal center. Woolen goods are also largely produced, as are also machinery of all descriptions, and a vast variety of other articles. Liverpool is the great shipping port of the county and of England. Lancaster is the county town, but there are a great many others far larger, such as Liverpool, Manchester and Salford, Oldham, Bolton, Blackburn, Preston, etc. Pop. 4,768,474.

Lancaster (lan'kas-ter), a municipal borough and river-port, England, the county town of Lancashire, on the left bank of the Lune, 45 miles north by east of Liverpool. It occupies the acclivities of a hill, on the summit of which stands the castle, now used as the county jail, built in the reign of Edward III, but with a keep supposed to be Saxon, and with a tower on the southeast attributed to the Emperor Hadrian. The industries comprise furniture, cordage, sail-cloth and cotton goods, floor-cloth, oil, varnish works, railway rolling stock, etc. Pop. (1911) 41,414.

Lancaster, a city of Pennsylvania, the county seat of Lancaster County, 68 miles west of Philadelphia. It has large stockyards and manufacturing interests, producing umbrellas, linoleum, watches, silk, and is a chief tobacco-leaf market, tobacco being grown largely in the surrounding district. It is also the center of a rich wheat district. Lancaster was settled about 1720, was the capital of the State from 1799 to 1812, and was incorporated as a city in 1818. Pop. 50,000.

Lancaster, a city, capital of Fairfield County, Ohio, on the Hocking River, about 32 miles s. e. of Columbus. It has numerous large industries, including iron foundries, flouring mills and manufactures of machines and agricultural implements, flint and window glass, boots and shoes, etc. Pop. 13,093.

Lancaster, Duchy of, a duchy annexed to the English crown in the reign of Edward IV, and which had separate courts of its own till the passing of the Judicature Act of 1873. Its revenues go directly into the privy purse of the sovereign, and are not reckoned among the hereditary revenues surrendered for the Civil List. The revenue is over £30,000. The chancellorship is a political appointment, and the chancellor is generally a member of the cabinet. The duties are nominal.

Lancaster, House of, the name given in English history to designate a line of kings. Edmund, second son of Henry III, was created Earl of Lancaster and Leicester. His son Thomas added Derby and Lincoln to his titles, became leader of the baronial opposition to Edward II, and was beheaded for treason. His grandson was advanced to the dignity of a duke, and dying without male issue, the inheritance fell to his daughter Blanche, who became the wife of John of Gaunt, who was the fourth son of Edward III. From him descended the kings, Henry IV, V and VI, of the House of Lancaster.

Lancaster, John of Gaunt, Duke of. See *John of Gaunt.*

Lancaster, Joseph, the propagator of the educational system which is coupled with his name and that of Dr. Andrew Bell, was born in London in 1778; died at New York through a carriage accident in 1838. In 1798 he opened a school for children in Southwark, which he conducted on the Madras system, which had been previously made known by Dr. Bell. (See *Bell, Andrew.*) The principal features of the system were the teaching of the younger pupils by the more advanced students, called monitors, and an elaborate system of mechanical drill, by means of which these young teachers taught large numbers at the same time. He soon found powerful support, and was able to erect a schoolhouse, which in 1805 was attended by 1000 children. The number of his patrons and the amount of subscriptions continuing to increase, he founded a normal school for training teachers in his system, which he now hoped to be able to extend over the whole kingdom. He made extensive tours through Great Britain and Ireland, and in 1811 had founded 95 schools, attended by 30,000 children. He was reckless and improvident in his habits; became bankrupt, and emigrated to America in 1818, where he at first received some support, but ultimately fell into poverty.

Lancaster Gun, named from the inventor, a species of rifled but not grooved cannon, having an elliptical bore, of which the major axis moves round till it traverses one-fourth of the circumference of the bore. The projectiles are also elliptical, so that when the gun is fired the projectile follows the twist of the bore, acquiring a rotary motion.

Lancaster Sound, a passage leading from the northwest of Baffin Bay west to Barrow Strait. It was discovered by Baffin in 1616, is about 250 miles long, with a central breadth of about 65 miles.

Lance (lans), a weapon consisting of a long shaft with a sharp point, much used before the invention of firearms, and still in use. It was common among the Greeks and Romans. The Macedonian phalanx was armed with it, and it was the chief weapon of the Roman infantry. The javelin, or *pilum*, was but secondary. The lance was the chief weapon in the middle ages, and was especially the arm of knighthood. The introduction of firearms gradually led to the disuse of the lance in the West of Europe, though it continued among the Turks, Albanians, Tartars, Cossacks, Poles and Russians, and other Slavonic tribes. Napoleon organized several regiments of Polish lancers for service in his army, and now most of the armies of Europe have regiments of Uhlans or lancers.

Lancelet (lans'let; *Amphioxus lanceolātus*), a singular fish, 2 or 3 inches long, with a slender, compressed, transparent, lance-shaped body, occurring in shoal water in the temperate and torrid parts of the earth. It forms the sole member and representative of the order Pharyngobranchii or Leptocardii. No true or paired fins are represented, and in the other parts of its anatomy the low organization of the creature is readily appreciable. The vertebral axis consists of a slender rod (*notochord*) pointed at each end, and composed of the softest of cartilage. There is no skull. The mouth is of oval shape, situated below and slightly behind the front part of the body, and there are no true jaws. It is surrounded by a ring of gristly matter, which supports small pieces of the same material; and these latter give origin to a number of delicate ciliated filaments or *cirri*. The mouth leads backwards into a very large dilated chamber representing the expanded pharynx, which performs the part of a breathing organ; and the walls or sides of the pharynx are perforated by transverse clefts or fissures, whilst the inner lining of the chamber is plentifully provided with vibratile filaments or cilia. Breathing takes place by the admission of water through the mouth into the dilated pharynx, the effete water passing through the slits or clefts in the sides of the sac into the cavity of the abdomen, whence it escapes outwardly by an opening known as the 'abdominal pore.' The circulation of the blood, which is destitute of color, is performed by contractile dilatations situated upon the main blood vessels, the heart being a simple expansion of the principal vein. The digestive system consists of a stomach and straight intestine. This animal has been pressed into the service of recent theories regarding the origin of living beings, as tending to illustrate how the higher and Vertebrate groups of animals may have become developed from lower and Invertebrate forms. Six species in all are known, one from Australia being regarded by some as a distinct genus.

Lancelot of the Lake (lan'selot), the name of one of the paladins celebrated in the traditions and fables relating to King Arthur and the Round Table. According to tradition, Lancelot was the son of Ban, king of Brucic, was educated by the fairy Viviana (the Lady of the Lake), and became one of the chief knights of Arthur's court. His love for Genevra, or Guinevere, the beautiful wife of Arthur, and his disregard of Morgana, a fairy, and the sister of Arthur, placed the knight in the most dangerous and marvelous situations, from which, however, he always extricated himself by his valor and the assistance of the Lady of the Lake. *Le Roman de Lancelot du Lac*, a famous mediæval romance, compiled by Walter Mapes (1150-96), has appeared in many forms. Lancelot is one of the chief figures in Tennyson's *Idylls*.

Lancerote. See *Lanzarote*.

Lancers. See *Lance*.

Lancet Window (lan'set), a high and narrow window with an acutely angled arched top. Lancet windows are a marked characteristic of the early English style of Gothic architecture, and are in a great degree peculiar to England and Scotland. They are often double or triple, and sometimes five are placed together, as in the window called the 'Five Sisters' at York. See *Early English Architecture*.

Lancewood (lans'wöd), the popular name of the wood of several trees of the order Anonaceæ, as of the *Oxandra virgāta*, a native of Jamaica, *Duguetia quitarensis*, a native of Cuba and Guiana, which possesses in a high degree the qualities of toughness and elasticity, and is on this account extremely well adapted for the shafts of light carriages, and all those uses where light, strong, but elastic timber is required.

Lanciano (lān-chä'nō), a town of Southern Italy, in the

province of Chieti (Abruzzo-Citeriore), the see of an archbishop. Pop. 18,316.

Land, forms an important kind of natural wealth susceptible of appropriation, and forming at the same time the principal deposit of the accumulated capital derived from the labor of preceding generations. In Britain, from various causes, among others the enormous cost of transfer, the land is in the hands of comparatively a few owners, and the properties are generally large. One-half of the land of the United Kingdom is in the hands of 7400 individuals; the other half being owned by 312,500 individuals. Barely one in a hundred of the population owns more than an acre of soil. This state of affairs does not exist to so great an extent in any other country. In France there are about 3,000,000 properties under 25 acres, only 150,000 above 100 acres; 1,750,000 of the population cultivate their own land. Small holdings cultivated by the owners are common in Germany, Belgium, Switzerland, Denmark, Norway, Sweden, Italy and other parts of Europe. The same is the case in the United States and the British colonies, the great estates being of minor importance as compared with the small farms.

Land, Tenure of. The various species of tenures and customs relating to property in land are noticed under the particular heads. See *Allodium, Feudal System, Fee, Fee-farm, Copyhold, Entail,* etc.

Landau (lân'dou), a town of Rhenish Bavaria, on the river Queich, 47 miles N. N. E. of Strasburg. It was formerly strongly fortified, and has been the scene of many stirring events. Pop. (1905) 17,165.

Land-crabs, crabs so called from their semiterrestrial mode of life, their habits leading them to live on land, and away from the sea, even for considerable periods of time. The true land-crabs (genus *Gecarcinus*) occur in Asia, particularly in the Eastern Archipelago; in America, and specially in the West Indian Islands; and in Australia also. The best-known species is *G. ruricŏla*, found in the higher parts of Jamaica, which often proves very destructive to the sugar plantations. The crabs of the genus *Cardisŏma*, represented by the common species *C. carnifex*, and inhabiting the West Indian mangrove swamps and marshes, appears to feed upon both vegetable and animal diet. Among other species of land-crabs may be enumerated the sand-crabs (*Ocypŏda*), the beckoning or calling crabs (*Gelasimi*) and the *Thelpusæ*, which inhabit fresh-water streams, but appear to be equally at home when on land.

Lander (lan'dĕr), Richard, an African traveler, born at Truro, England, in 1804; died in 1834. He accompanied Captain Clapperton on his last expedition as servant, and in 1830 he set out with his brother John (1807-39) on an exploring expedition under the auspices of the British government. He was able to lay down with approximate correctness the lower course of the Niger, and proved that it entered the sea by several mouths at the Bight of Benin. In the beginning of 1834, while on a trading expedition in the delta of the Niger, he was wounded by the natives, and though he was able to reach Fernando Po, he died soon after. He published *Records of Captain Clapperton's Last Expedition in Africa, with R. Lander's Journal*, 1829; *Journal of an Expedition to Explore the Course and Termination of the Niger*, 1832.

Landerneau (lân-der-nō), a seaport of France, department Finistère, 13 miles northeast of Brest. Pop. 5779.

Landes (lând), a term specifically applied in France to extensive level and largely barren tracts stretching from the mouth of the Garonne along the Bay of Biscay and from 60 to 90 miles inland, bordered with sand hills next the sea. They bear chiefly heath and broom, but on the seaward side are largely planted with the maritime pine, and considerable stretches have been reclaimed. The inland plains are chiefly occupied as sheep-runs. The inhabitants lead a sort of nomadic life. The landes are dry in summer and marshy in winter, and stilts are much used by the inhabitants in traversing them.

Landes, a maritime department of France, bounded by the Bay of Biscay and by the departments of Gironde, Lot-et-Garonne, Gers and Basses-Pyrénées. It has an area of 3599 square miles. It contains three arrondissements, Mont-de-Marsan (the capital), Dax and St. Sever. Forests are extensive, and are gradually taking the place of the *landes* (see above article). The fertile lands consist chiefly of the alluvial valleys to the south of the Midouze and the Adour. The *dunes*, a sandy tract covered with pines, stretch along the coast of the department to a depth of about 3 miles. The vine is cultivated to a considerable extent in the fertile districts. Pop. (1906) 293,397.

Landeshut (lân'des-hŏt), a town of Prussia, in Silesia, district of Liegnitz, in a beautiful valley at

the foot of the Riesengebirge. Pop. (1905) 9000.

Landgrave (land'grāv; German, *Landgraf*), in Germany, originally, about the twelfth century, the title of district or provincial governors deputed by the emperor, and given them to distinguish them from the inferior counts under their jurisdiction. Later, it was the title of three princes of the empire, whose territories—Thuringia, Lower and Higher Alsace—were called landgraviates.

Land League, an organization projected by Mr. Parnell, the leader of the Irish national movement, in 1879, the ostensible object of which was to purchase the land of Ireland for the people of Ireland. Funds were largely subscribed, especially in America, but the stringent rules against landlords and tenants holding aloof from it, and the alleged complicity of its members with many terrible outrages, caused it to be suppressed in 1881.

Landlord and Tenant. The landlord in relation to a tenant is the person from whom lands or tenements are taken on lease (see *Lease*), or by some other contract or agreement. The tenant is the person who holds lands or tenements of another by any kind of contract or agreement, usually for a periodical rent. The laws governing tenancy vary in different countries. In the United States the statutes generally allow leases for only one year, or less, to be created by oral agreement, all others being required to be put in writing; and in some of the States they are also required to be under seal. Tenancies at will may still, as at common law, be created by oral agreement, followed by the entry or occupancy of the tenant. In cases where a tenant holds over the landlord may treat him as a trespasser, and eject him accordingly. If he forbears to do this the trespass is condoned and the wrongdoer acquires a certain legal status. In this case the latter becomes a tenant at will. If the landlord accepts rent and recognizes his right to enjoy possession for certain periods of time, the tenant must be treated as a tenant from year to year, or from month to month as the case may be. In such cases the terms of the new tenancy are usually determined by the terms of the expired lease. It is customary, however, to stipulate in leases that notice must be given by either party of his intention to terminate the lease at its expiration. As the statutes of the several States greatly vary, no special details bearing on this subject can be given.

Landon (lan'dun), LETITIA ELIZABETH, an English poetess, better known by her initial signature of L. E. L., was born in 1802; died at Cape Coast Castle, in 1839. She wrote much for the then fashionable annuals, and the romantic gloom and melancholy of her verses gave them a charm for many people. In 1838 she was married to a Mr. George MacLean, and sailed with him to Cape Coast Castle in Western Africa, where he was governor. She died there soon after her arrival, from an accidental overdose of prussic acid, which she had been in the habit of using medicinally. Her chief works are: *The Improvisatrice; The Troubadour; The Golden Violet, etc.; The Venetian Bracelet, etc.; The Lost Pleiad; Ethel Churchill*, a novel; and *Romance and Reality*, a novel.

Landor (lan'dur), WALTER SAVAGE, an English poet and prose writer, born at Ipsley Court, Warwickshire, in 1775; died in 1864. He was educated at Rugby and Oxford, from both of which he was expelled for unruliness. He published a small volume of poems in 1795, and a lengthy poem, *Gebir*, in 1798. This latter he subsequently translated into Latin verse, being one of the most accomplished Latinists of his time. He succeeded to a large property on the death of his father, but he soon sold it off, determining to live abroad. In 1808 he raised a body of men at his own expense for the defense of Spain against France. In 1811 he married a Miss Thuillier of Bath, and settled at Florence, where many of his works were written. Having separated from his wife, he returned to England in 1835. In 1857 the publication of some ugly slanders against a lady of Bath led to a prosecution for libel, and Landor was brought in for £1000 damages. He left England, and once more found a resting place in Florence, where he died. His fame chiefly rests on his *Imaginary Conversations*, between celebrated persons of ancient and modern times, which is a model of a pure, vigorous, finished English style. Among his other works are *Count Julian*, a tragedy; *Hellenics*, or Greek poems; *Pericles and Aspasia*, imaginary letters; *Pentameron and Pentalogue;* and the dramas *Andrea of Hungary* and *Giovanna of Naples*. His biography has been written by John Forster.

Land-rail, or CORN-CRAKE. See *Corncrake*.

Landrecies (lan-dr-sē), or LANDRECY, a small French town, on the Sambre, dep. of Nord. It was formerly fortified, and played an important part in the French wars. Pop. about 3000.

Landsberg (länts'berg), a town of Prussia, province of Brandenburg, and 37 miles northeast of Frankfurt, on the Wartha. It has manufactures of engines and boilers, carriages, woolens, tobacco, spirits, etc. Pop. (1905) 36,934.

Landscape (land'skāp), a term applied to a portion of land or territory which the eye can comprehend in a single view, and to a painting of such. See *Painting*.

Landscape Gardening, is the art of laying out grounds, arranging trees, shrubbery, etc., so as to bring into harmonious combination all the varied characteristics and surroundings. It disposes flowering plants, shrubs and trees over varying levels in such a manner as to produce the most pleasing effects, it shuts out undesirable views by means of judicious planting, and introduces rock-work, water and other artistic embellishments where the local peculiarities of the ground permit.

Landseer (land'sēr), SIR EDWIN, animal painter, born in London in 1802; died in 1873. He began to draw animals when a mere child; at thirteen he exhibited at the Academy, and the year following became a student. Thenceforward he exhibited regularly at the Academy and the British Institution. In 1826 he was elected A.R.A.; in 1830, R.A.; in 1850 he was knighted, and in 1865 he declined the presidency of the Academy. He takes the very highest rank among animal painters; and though he has been blamed for introducing too human a sentiment and expression into some of his animals, the humor and pathos of animal nature has had no finer exponent. Among his best-known works are: *The Return from Deerstalking, Bolton Abbey in the Olden Time; The Return from Hawking; The Shepherd's Chief Mourner; A Distinguished Member of the Humane Society; There's Life in the Old Dog Yet; Laying Down the Law; The Stag at Bay; Monarch of the Glen;* the celebrated work of sculpture, the lions at the base of Nelson's monument, Trafalgar Square, London, etc.—CHARLES LANDSEER, brother of the above (born in 1799; died in 1879), had a good reputation as a painter of subjects from English history and poetry. He was chosen Academician in 1845, and keeper of the Academy in 1851.—THOMAS LANDSEER, also a brother (born in 1795; died in 1880), was celebrated as an engraver, and made many reproductions of his brothers' works.—JOHN LANDSEER, engraver, father of the above (born in 1769; died in 1852). He was elected associate engraver of the Academy, 1807; lectured on and published several treatises on art.

Land's End, a headland in Cornwall, forming the southwestern extremity of England (lat. 50° 6′ N., lon. 5° 45′ W.). There is a lighthouse on the rocks, called Longships, about a mile to the west.

Landshut (länts'höt), a picturesque old town of Bavaria, on the Isar, 40 miles N. E. of Munich. It has many interesting buildings, among which are St. Martin's Church, a fine Gothic structure built in 1407-77, with a steeple 462 feet high; the royal palace, the town house, and the old castle of Trausnitz. Landshut has manufactures of leather, starch, machinery, carriages, tobacco, paper, etc. It formerly had a university, transferred in 1800 from Ingolstadt, but removed to Munich in 1826. Pop. (1910) 25,137.

Landshut, a town of Prussia. See *Landeshut*.

Landskrona (läns-krö'nä), a seaport of Sweden, län Malmö, on a tongue of land projecting into the Sound, 15 miles N. N. E. of Copenhagen. Its harbor is the best on the Swedish coast of the Sound. Pop. 14,390.

Landslip (land'slip), the slipping or sliding of a considerable tract of land or earth from a higher to a lower level. Landslips are due to a variety of causes, chiefly the decay of supporting strata or excessive saturation of the soil by rain. Among the more disastrous occurrences of this kind are the slip of the Rossberg Mountain behind the Rigi in Switzerland in 1806, burying villages and hamlets with over 800 inhabitants; and that at Naini Tal, a sanitary hill-station in the Himalayas, in 1880, when 230 lives were lost.

Lands, Public. See *Public Lands*.

Landsturm (länt'sturm), a local militia of Germany, which is never called from its own district but in case of actual invasion. It comprises that portion of the reserve too old for the *Landwehr* (which see). Other European nations have a force of the same nature.

Land Surveying. See *Surveying*.

Land Tax, a tax levied on land. What is known as the land tax in Britain was imposed in the reign of William III as a substitute for escuage, talliage, fifteenths, and other contributions. It was imposed annually from 1693 to 1798 at a varying rate, oftenest 4*s*. per pound. In the latter year it produced about £2,000,000, when it was re-

placed by a perpetual rent charge on land, with power of redemption, and a tax annually imposed on personal property, the latter tax abolished in 1833. In the land tax provision of the 1910 budget, the rates on landed property were considerably increased.

Landwehr (lânt'vär), that portion of the military force of Germany and other European nations which in time of peace follow their ordinary occupations, excepting when called out for occasional training. The landwehr in some respects resembles a militia, with this important difference, that all the soldiers of the landwehr have served in the regular army. This system has received its fullest development in Germany, in which country it adds enormously, and at comparatively little cost, to the military power of the state.

Lane (lân), Franklin Knight, Secretary of the Interior in President Wilson's cabinet, was born on Prince Edward Island, Canada, in 1864. He was taken to California in childhood and was educated at the University of California. He engaged in newspaper work and became editor of the Tacoma *Daily News*. He studied law and was admitted to the bar in 1889. President Roosevelt appointed him a member of the Interstate Commerce Commission in 1905, and he served till 1913, when President Wilson invited him to enter the cabinet as Secretary of the Interior. It was mainly through his efforts that the Alaska Railway Bill, providing for a government-built railroad, was passed.

Lanfranc (lan'frank), Archbishop of Canterbury, son of a wealthy citizen of Pavia; born in 1005; died in 1089. He became a monk of the Benedictine abbey of Bec in 1042 and prior in 1046. In 1062 William of Normandy made him abbot of Caen, and after the Conquest he became archbishop of Canterbury (1070). He did much to purify and reform the church, at the same time preserving its insular independence. He enjoyed the confidence of William I and promoted the peaceable succession of William Rufus, under whom he exercised the chief authority till his death. His writings were printed in 1647, and again at Oxford in 1844.

Lanfrey (lân-frā), Pierre, a French historian, born in 1828; died in 1877. His life was entirely literary till the outbreak of the Franco-German war, when he joined the *garde mobile*. He was elected a member of the assembly in 1871, was ambassador to Switzerland in 1873, and made life senator in 1875. His chief work is his *History of Napoleon I*, in which he endeavors with unsparing pen to paint the man as he really was.

Lang, Andrew, miscellaneous writer, born at Selkirk, Scotland, in 1844; educated at Edinburgh Academy, St. Andrew's University and Balliol College, Oxford, where he took a distinguished position. A most versatile writer, he has published several volumes of ballades and other light verse; *Custom and Myth*, a valuable contribution to the science of comparative mythology; the article *Mythology* in the *Encyclopædia Britannica*; translations of Homer (with other collaborators) and of Theocritus, *History of Scotland*, 3 vols., his most valuable work, and numerous other works on varied topics. With A. E. W. Mason he wrote the humorous novel, *Parson Kelly*. He was a frequent contributor to the daily press and to periodical literature. Died in 1912.

Lange (lang'ē), Johann Peter, a German theologian, born in 1802; died in 1884. He studied theology at Bonn; was appointed professor of theology at Zürich in 1841, and at Bonn in 1854. His chief works, *Life of Jesus*, *Christian Dogmatics*, *Apostolic Age*, etc., have been translated into English, including the work well known under the title of *Lange's Commentary*.—Friedrich Albert Lange, son of the above, born in 1828; died in 1875, is author of a *History of Materialism* and other philosophical works.

Langeland (lâng'e-lân), an island of Denmark between Laaland and Fünen, about 30 miles in length and from 3 to 5 in breadth; area, 100 square miles; pop. 18,901. This island is fertile in every part. Rudkjöping is the chief town.

Langensalza (lâng'en-zäl-tsä), a town of Prussia, in the province of Saxony, 20 miles northwest of Erfurt, on the Salza. It is a busy place, with cloth and other factories. Three battles have been fought in the vicinity, in 1761, 1813 and 1866, the Hanoverians being defeated by the Prussians in the last. Pop. (1905) 12,545.

Langholm (lang'om), a market town of Scotland, Dumfriesshire, on the Esk, 30 miles east by north of Dumfries. It consists of two parts—Old Langholm on the E. bank of the Esk and New Langholm on the W. bank—and is celebrated for its sheep fairs and its woolen manufactures. Pop. 3142.

Langhorne (lang'hôrn), John, an English poet and miscellaneous writer, born in 1735; died in 1779. He published numerous poems, but his chief work, done in conjunction with

his brother William (1721-72), is a translation of *Plutarch's Lives*, which still holds a good position. He was prebend of Wells Cathedral at his death.

Langlande (lang'land), or LONGLAND, WILLIAM, the supposed author of the English poem, *The Vision of William concerning Piers Plowman*, was born about 1332, perhaps at Cleobury-Mortimer, Shropshire; and is traditionally reported to have been a secular priest, educated at Oxford. From internal evidence it is gathered that the poem, in its earliest form, was composed about 1362. Its rhythmical structure depends upon alliteration, which forms a substitute for rhyme. The poem is allegorical in form and satirical in spirit; the trials and troubles of life generally, but more particularly the corruptions of the church and the worldliness of the ecclesiastical order, are its theme. *The Creede of Piers Plowman* is an imitation of Langlande's work which appeared about the end of the fourteenth century. It is written by a follower of Wickliffe. There are three chief texts of *Piers Plowman*, to which are assigned the respective dates of 1362, 1377 and 1393. These have all been published by the Early English Text Society (1867, 1869, and 1873) under the editorship of Mr. Skeat. *Piers Plowman*, besides being of value for its pictures of old English life, is of very great importance for the study of English in its earlier forms. Langlande is said also to be author of a poem written in 1399, which Skeat has titled *Richard the Redeles*.

Langley (lang'li), SAMUEL PIERPONT, astronomer, was born at Boston, Massachusetts, in 1834; died in 1906. He was graduated at the Boston High School, was a professor in the U. S. Naval Academy and in 1887 became Secretary of the Smithsonian Institution. He designed a system of railway time service which came into common use, discovered an extension of the invisible solar spectrum, and was one of the first to experiment in the flight of heavier-than-air machines. He wrote *The New Astronomy*, *Researches on Solar Heat*, etc.

Langobardi. See *Lombards*.

Langres (lân-gr), a town in France, department of Haute-Marne, near the left bank of the Marne, 22 miles S. S. E. of Chaumont. It occupies a steep hill commanding the entrance from the basin of the Saône into that of the Seine, and is a fortress of the first class. It has a cathedral, chiefly Romanesque but partly Gothic, dating from the twelfth century. Pop. (1906) 6663.

Langtoft (lang'toft), PIERRE DE, an English historian, canon of Bridlington, Yorkshire, in the reigns of Edward I and Edward II, author of a Norman-French chronicle of England to the end of the reign of Edward I. It has been published in the Rolls Series, and was translated into English rhyme by Robert de Brunne.

Langton (lang'tun), STEPHEN, an English cardinal, and Archbishop of Canterbury in the reign of John, born about 1150. In 1206 Innocent III created Langton a cardinal and nominated him to the see of Canterbury, consecrating him archbishop next year. King John refused to accept him; it was only after England had been placed under an interdict and John excommunicated and threatened with deposition that he yielded. Langton was acknowledged in July, 1213, and in August he joined the insurgent barons, and acted with them in compelling John to sign Magna Charta. He crowned Henry III, and in 1223 he demanded of him the full execution of the charter. He was the author of a number of theological treatises. He died in 1228.

Language. See *Philology*.

Languedoc (lân-gê-dok), one of the old provinces of Southern France, now forming the departments of Aude, Tarn, Hérault, Lozère, Ardèche and Gard, as well as the arrondissements of Toulouse and Villefranche, in the departments of Haute-Garonne; and the arrondissements of Puy and Yssingeaux, in the department Haute-Loire. As to the name see next article.

Langue d'oc (-dok), the name given to the independent Romance dialect spoken in Provence in the middle ages, from its word for *yes* being *oc*, a form of the Latin *hoc*. It was thus distinguished from the language spoken by the natives of the north of France, which was called *Langue d'oui* or *Langue d'oil*, their affirmative being *oui* or *oil*. The *langue d'oc* was the language of the Troubadours, and is known also as *Provençal*.

Lanier (lan'i-êr), SIDNEY, poet, born at Macon, Georgia, in 1842; died in 1881. He studied and practiced law, but abandoned it to devote himself to literature. He served as a private in the Confederate army and after 1879 was lecturer on English literature at Johns Hopkins University. His poems, especially his *Centennial Ode*, gave him a wide reputation and showed ample poetic power. He wrote also a number of works in prose, as *The Science of English*

Verse and *The English Novel and Its Development.*

Laniidæ (lan-ĭ'ĭ-dē), the shrikes, a family of insessorial or perching birds. See *Shrike.*

Lankester (lan'kes-tĕr), British scientist, born in London in 1847, educated at Oxford. He was professor of zoology and comparative anatomy at University College, London, 1874–90, professor at Oxford, 1891–98, and at the Royal Institution, London, 1898–1900. He was director of the natural history department of the British Museum, 1898–1907. He has published many scientific works.

Lanner (lan'ĕr), a species of hawk, found in Mediterranean countries. Similar falcons are found in southwestern United States.

Lannes (lăn), JEAN, Duke of Montebello and marshal of France, was born in 1769; mortally wounded at Aspern in 1809. Originally a dyer, he enlisted into the army in 1792, and served in Spain and Italy, where he attained the rank of brigadier-general. He accompanied Napoleon to Egypt in 1798, gained the victory at Montebello in Italy in 1800, and bore a chief part at Marengo, Austerlitz, Eylau, Jena, Friedland (1805) and Saragossa.

Lanolin, or wool fat, chiefly consists of cholesterin and fatty acids; formula $C_{27}H_{45}OH$. Lanolin is prepared from 'suint,' or the grease of sheep's wool, by separating the acids by saponification, and then purifying the residue—a pale yellow, glutinous solid, odorless and neutral, and melting at 38° C. As it is easily absorbed by the skin, it is extensively used as a basis of ointments. It does not become rancid and is capable of taking up its own weight of water.

Lansdowne (lans'down), HENRY CHARLES K. FITZMAURICE, 5TH MARQUIS OF, was born in 1845 and held various posts in the British government, succeeding to the marquisate in 1866. He was governor-general of Canada from 1883 to 1888; governor-general of India, 1888-93; secretary of war, 1895-1900; foreign secretary, 1900-1905. In the Asquith coalition ministry he served in the cabinet as minister without portfolio, 1915-16. While the European war was in progress he created a sensation by suggestion of a peace parley with the German government.—WILLIAM PETTY, first marquis, better known as Earl of Shelburne, born in 1737; died in 1805. He began political life in 1763; became prime minister in 1782, but was driven from power by the Fox and North coalition. In 1784 he was made Marquis of Lansdowne.

Lansing (lan'sing), a city, capital of Michigan, on Grand River, 85 miles N. W. of Detroit. The seat of government was located here in 1847 and it was made a city in 1859. It has a handsome State House, State Library, State Reform School, Agricultural College and School for Blind. It is an important manufacturing center, producing automobiles, traction engines, gas and gasoline engines, building materials, furniture, etc. Pop. 45,000.

Lansing, ROBERT, American lawyer and public official, born in Watertown, New York, in 1864; graduated from Amherst College and was admitted to the bar in 1889. He has been counsel and delegate for the United States in various international questions such as the Bering Sea Fur Arbitration (1892–93), Bering Sea Claims Commission (1896–97), Alaskan Boundary Tribunal (1903), North Atlantic Coast Fisheries Arbitration (1909–10), and American and British Claims Arbitration (1912–14). In March, 1914, he was appointed counselor for the Department of State and in 1915 succeeded William Jennings Bryan (*q. v.*) as secretary of state, holding office during the European war.

Lansingburg, a former village of Rensselaer County, New York, on the east bank of the Hudson, nearly opposite its confluence with the Mohawk. It now forms part of the city of Troy. Its manufactures are extensive.

Lantern. See *Lamp.*

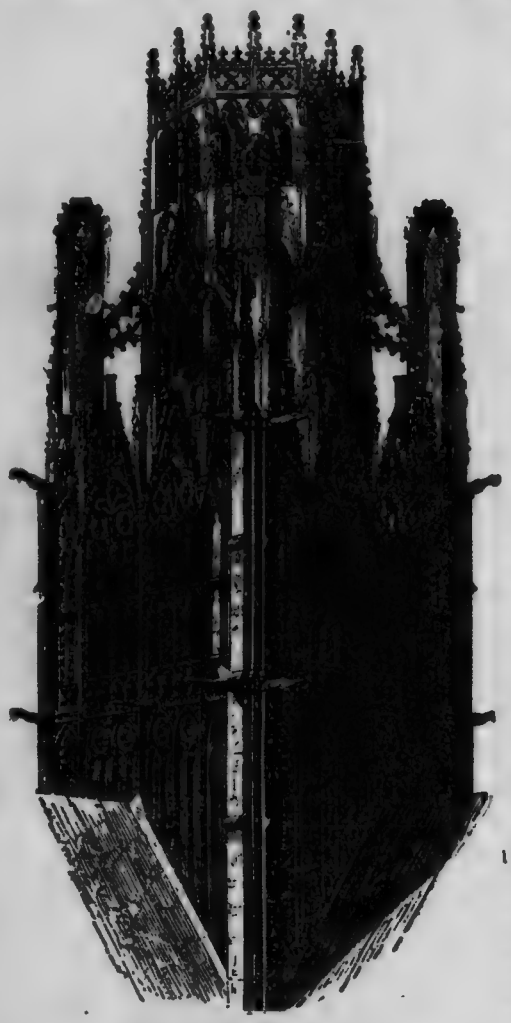
Lantern (lan'tĕrn), in architecture (1) an erection on the top of a dome, on the roof of an apartment, or in similar situations, to give light, to promote ventilation, or to serve as a sort of ornament. (2) A tower which has the whole or a considerable portion of the interior open to view from the ground, and is lighted by an upper tier of windows, such as the towers which are commonly placed at the junction of the cross in a cruciform church; also a light open erection occurring on the top of a tower.

Lantha'nium, LAN'THANUM (sym. La, at. wt. 92), a rare metal associated with didymium in the oxide of cerium, and so named from its properties being concealed (Gr. *lanthanein,* to lie hid), as it were, by those of cerium. Lanthanum forms only one series of compounds, such as the oxide, chloride and sulphide.

Lanzarote (lăn-zä-rō'tä), the most northeastern of the Canary Isles; greatest length, 36 miles; mean breadth, 15 miles. Its coast is generally

bold, and the hills in the center rise to an elevation of 2000 feet. The island is of volcanic origin, and one volcano is still active. Pop. 17,546.

Lanzi (län'tsē), LUIGI, an Italian archæologist, born in 1732; died in 1810. He entered the order of the



Lantern—St. Owen, Rouen.

Jesuits in 1749, and was professor of the humanities in several colleges. He became assistant director of the gallery at Florence, and devoted his energies to archæological and artistic research. His chief works are a *Treatise on the Etruscan and other Ancient Languages of Italy*, and the *History of Italian Painters*, an esteemed work which has been translated into English by Roscoe.

Laocoon (lā-ok'ō-on), in ancient Greek legend, a priest of Poseidon (Neptune), among the Trojans, who, along with his two sons, was killed by two enormous serpents sent by Apollo. The story has frequently furnished a subject to the poets, but it is chiefly interesting as having served as the subject of one of the most beautiful groups of sculpture in the whole history of ancient art. This was discovered at Rome among the ruins of the palace of Titus in 1506, and is now placed in the vatican. It is supposed to be the group described by Pliny as the work of three sculptors of Rhodes, a father and two sons, Agesander, Polydorus and Athenodorus, but doubts exist as to its date.

Laodicea (la-o-di-sē'a), the ancient name of several places in Asia Minor. One of these, now called *Eski Hissar* (Old Castle), 120 miles E. S. E. of Smyrna, was the site of one of the seven primitive Christian churches of Asia. Another is now known as *Latakia*.

Laon (län; ancient, *Bibrax Suessionum*), a fortified town in France capital of the department Aisne, 74 miles northeast from Paris. It is situated on a height in the midst of a level country, and has interesting old buildings, especially the former cathedral, dating from the twelfth century. Laon was the seat of a bishopric as early as 500 A.D., and was made the capital of his kingdom by Charles the Simple of France about 900. Napoleon Bonaparte was defeated here in 1814. On September 9, 1870, it surrendered to the Germans without a blow being struck. Pop. 9787.

Laos (lā'ōs), a territory in the Indo-China peninsula, surrounded by the Shan States, Anam, Tonquin and the Chinese province of Yun-nan. A large part of it has been a French protectorate since 1893; the remainder is included in Siam. Its extent and the number of its inhabitants are unknown, but they have been estimated at one and a half millions. The country is intersected by mountain ranges and traversed by the Me-kong or Cambodia river, the alluvial valley of which produces abundant sugar, rice, tobacco, etc. Laos exports to the neighboring states a considerable quantity of ivory, gold, silver, precious stones, silk, etc. The inhabitants are reported to be connected with the Burmese in their racial, social, and religious peculiarities. The capital is Chieng-Mai.

Lao-tze (lā'ō-tseh), or LAO-TSEU, sometimes also called LAO-

KIUN, a celebrated Chinese philosopher, founder or reformer of one of the most ancient and important religious sects of China, known as the Tao, or sect of reason. Born about the year 600 B.C., we learn that he was historiographer and librarian to a king of the Chow dynasty; that he traveled to the borders of India, where he may have become acquainted with Buddhism; that he met Confucius and reproached him for his pride, vanity and ostentation; that he was persuaded to record his doctrines in a book, which he did in the *Tao-ti-king* or *The Path to Virtue;* that on completing this task he disappeared into the wilderness, and there, it is said, ascended to heaven. According to him, silence and the void produced the Tao, the source of all action and being. Man is composed of two principles, the one material and perishable, the other spiritual and imperishable, from which he emanated, and to which he will return on the subjugation of all the material passions and the pleasures of the senses. Lao-tze's moral code is pure, inculcating charity, benevolence, virtue and the free will, moral agency and responsibility of man. From the insight and deep wisdom of his moral code it has been supposed that Lao-tze had been indebted to western teaching, but there is no clear proof of this. Since the second century of our era the sect has continued to extend over China, etc.

Laparotomy (la-pa-rot'o-mi), a surgical opening of the abdominal cavity by incision. See *Ovariotomy.*

La Paz (lä-päth'), or LA PAZ DE AYACUCHO, a town of Bolivia, capital of a department of the same name, and since 1898 capital of Bolivia. The city is built in amphitheater form, is the seat of a bishopric, and has a cathedral and university. It is a place of considerable wealth and importance. Most of the inhabitants are Aymara Indians, or of mixed race. Pop. 78,856.—The department has an area of 53,777 square miles and a population estimated at 445,616.

La Pérouse (pā-rōs), JEAN FRANÇOIS GALAUP, COMTE DE, a French navigator, born in 1741. He entered the naval service at an early age, and during the American war received command of an expedition sent to Hudson Bay, where he destroyed the trading stations of the British. In 1785 he left France in charge of an exploring expedition to the Pacific, and having visited parts of its western and eastern coasts and sundry of its islands, the expedition arrived in Botany Bay in 1788. Here La Pérouse left a letter, in which he declared his intention to proceed to the Isle of France, but nothing more was heard of the unfortunate explorer. Eventually it was discovered that his two vessels, the *Boussole* and *Astrolabe*, had struck on a reef at Mallicolo in the New Hebrides, and that the crews were all either drowned or murdered.

Lapis Lazuli (lăp'is laz'ū-lī), an aluminous mineral of a rich azure-blue color; luster vitreous; fracture uneven; scratches glass; opaque; easily broken; specific gravity, 2.45. The finest specimens are brought from China, Persia and Central Asia, and it is much esteemed for ornamental purposes, especially for inlaid work. From it the pigment called ultramarine is prepared, but this is now also manufactured artificially.

Laplace (lä-plăs), PIERRE SIMON, MARQUIS DE, a celebrated French mathematician and astronomer, born in 1749; died in 1827. At an early age he showed wonderful aptitude in mathematical studies; became professor of mathematics in his native town; subsequently sought fortune in Paris, and there made the acquaintance of d'Alembert. Under his guidance the youth soon signalized himself by discovering the invariability of the mean distances of the planets from the sun. He was appointed examiner of the royal corps of artillery, and at the early age of twenty-four was admitted into the Academy of Sciences. Besides his mathematical work he was associated with Lavoisier in chemical research. During the revolution Laplace was an extreme republican, and in 1799 he was nominated to the ministry of the interior—a position which he filled so badly that he was superseded in six weeks. Receiving the patronage of Bonaparte he was made president of the senate, and in 1806 raised to the dignity of count of the empire. Notwithstanding these favors he deserted the emperor in 1814, voted for the establishment of a provisional government, and was rewarded by the Bourbons with the title of marquis. In 1816 he was named a member of the French Academy. Almost any one of Laplace's original researches is alone sufficient to stamp him as one of the greatest of mathematicians. The discovery of the invariability of the major axes of the planetary orbits, the explanation of the great inequality in the motions of Jupiter and Saturn, the solution of the problem of the acceleration of the mean motion of the moon, the theory of Jupiter's satellites, and other important laws are due to Laplace, including his famous Nebular Theory, or attempt to explain the development of the Solar Sys-

tem. The most important of his works are the *Mécanique Céleste; Système du Monde*, a *resumé* of all modern astronomy; *Théorie analytique des Probabilités; Essai sur les Probabilités.*

Lapland (lap'land), the land of the Lapps, an extensive territory in the north of Europe, stretching between lat. 64° and 71° N., and from the shores of Norway east to those of the White Sea; area about 130,000 square miles, of which more than half belongs to Russia, and the remainder is shared, in nearly equal proportions, between Sweden and Norway. The climate for nine months of a dark winter is excessively cold; spring and autumn are short; and the summer of two months, when the sun never sets, is extremely hot. Vegetation is scanty except in the form of birch, pine, fir and the abundant mosses which supply food for the herds of reindeer. The Lapps belong to the Finnic branch of the Turanian family. They are a small, muscular, large-headed race, with high cheek-bones, wide mouth, flat nose, and scanty beard. Many of them are nomadic, owing their subsistence to their herds of reindeer; others support themselves by fishing. They are generally ignorant, simple hearted and hospitable. The Norwegian Lapps belong to the Lutheran and the Russian Lapps to the Greek Church. Their numbers do not exceed 27,000.

La Plata. See *Argentine Republic.*

La Plata (lä-plä'ta), a city of the Argentine Republic, situated on the shores of a fine natural harbor called Ensenada, in the La Plata estuary, 40 miles below the city of Buenos Ayres, and connected with it by rail. Although recently founded as the capital of Buenos Ayres province, it has already become an important commercial center, having a palace for the legislative assembly, a cathedral, law courts, theater, public park, etc. Pop. (1912) 106,382.

Laporte (la-pōrt), a city, county seat of Laporte County, Indiana, 59 miles east of Chicago on the Lincoln Highway, in a lake country of great picturesqueness. It is served by the Lake Shore and Michigan Central railroad. There are manufactures of various kinds. Pop. 16,500.

Lappenberg (lap'en-berg), JOHANN MARTIN, a German historian, was born at Hamburg in 1794; died in 1865. Sent by his father to study medicine at Edinburgh, he gave his attention to history and political science, and spent some time in London studying the English constitution. Returning to Germany, he continued his studies in Berlin and Göttingen. He was made archivist of Hamburg in 1823, a post which he held till 1863. He became a member of the senate in 1848, and was appointed plenipotentiary to Frankfort in 1850. His most remarkable work is his *History of England under the Anglo-Saxon and Norman Kings.*

Lapwing (lap'wing), a bird belonging to the family of plovers and order of Grallatores. The common lapwing (*Vanellus cristātus*), a well-known European bird, is about the size

Lapwing (*Vanellus cristātus*).

of a pigeon; it is often called the *peewit* from its particular cry. In the breeding season these birds disperse themselves over the interior of the country, where they lay their eggs in a small depression of the ground, in cultivated fields, moors, etc. In winter they retire to the seacoast. Their eggs are esteemed a great luxury, and great numbers are annually sent to the London markets.

Laraiche (lä-rāsh'), or EL ARAISH, a seaport of Morocco. Pop. about 6000.

Laramie (lar'a-mē), a city, capital of Albany County, Wyoming, 57 miles N. W. of Cheyenne. It is 7145 feet above sea level, with beautiful mountain scenery. It is the seat of the University of Wyoming, has railway and machine shops, cement plaster mills, etc., and is an important supply point for the surrounding mining and agricultural lands. Pop. 8500.

Laramie Mountains, a range of the Western United States, which extends through Wyoming and Colorado and bounds the Laramie Plains on the east and northeast. The highest point is Laramie Peak, 10,000 feet high.

Larboard (lär'bord), the left side of a ship looking towards the stem, now called the *port* side.

Larceny (lär'se-ni) is the fraudulent appropriation of the personal property of another person with-

out that person's consent. To constitute this crime the removal of the goods to any distance is not necessary, but it requires to be shown that the article has completely passed, for however short a time, into possession of the criminal. Concerning the kinds of things the appropriation of which is larceny, the common law restricted them to personal property as distinguished from real estate, but this distinction has been largely abolished by recent statutes. Larceny was formerly divided into two kinds, grand and petty, which was determined by the value of the thing stolen, but the distinction is now abolished in almost all the States. The penalty varies in the different States; but, generally, in ordinary cases, a person convicted of larceny is liable to imprisonment at hard labor for not more than two years; on a second conviction not more than ten, nor less than four.

Larch, the common name of trees belonging to the genus *Larix*, nat. order Coniferæ, having deciduous leaves, small, erect, oval, blunt-pointed cones, and irregularly margined scales. This genus is now usually united to *Abies*. The common larch (*L. Europæa*), though a native of Italy, Switzerland and South Germany, is one of the most frequently cultivated trees in Britain, and is remarkable for the elegance of its conical growth and the durability of its wood, which is used for a variety of purposes. Besides the common larch, there are the Russian larch, the red larch and the black larch (*L. Americana*), a native of America. The last species has also the name of *hackmatack* or *tamarack*.

Lard, is obtained from the fat of swine when it is heated to boiling point and then strained. It is chiefly composed of oleine and stearine, and is now largely used in the manufacture of candles, soap, pomades, etc. The best quality is found in the fat which surrounds the kidneys, and this is employed in pharmacy for the preparation of unguents. When subjected to pressure the oleine is liberated, forming lard-oil, which is much used as a lubricant for machinery.

Lardizabalaceæ (lar-di-zab-a-lā'-se-ē), a nat. order of plants, natives of South America and China, now regarded as a tribe of the Berberidaceæ or barberries.

Lardner (lärd'ner), Dionysius, popular writer on scientific subjects, born at Dublin in 1793; died in 1859. Educated at Trinity College, he devoted his attention to science, contributed to the leading cyclopædias, and in 1827 was appointed to the chair of natural philosophy and astronomy in the University of London. Having been convicted in the law courts of immorality, he withdrew to America, but returned in 1845 and resided in Paris.

Laredo (lä-rē'dō), a city, capital of Webb County, Texas, on the Rio Grande, 153 miles s. w. of San Antonio. It is a railroad center and largely exports wool and cattle, while coal and iron are extensively worked. There are car and machine shops and brick kilns, also concentrating and sampling works. It has a large shipping trade in wool, bricks and onions. Pop. 14,855.

Lares (lā'rēz), a class of tutelary spirits or deities (domestic and public) among the ancient Romans. All the household lares were headed by the *lar familiaris*, who was revered as the founder of the family. In the mansions of the rich the images of the lares had their separate apartment. When the family took their meals some portion was offered to the lares, and on festive occasions they were adorned with wreaths.

Largo (lär'gō), an Italian word in music meaning slowly. *Largo* is one degree quicker than *grave*, and two degrees quicker than *adagio*. *Larghetto* is the diminutive of *largo*.

Largs (lärgz), a seaside resort in Scotland, county of Ayr, on the Firth of Clyde. In 1263 Alexander III defeated the Norwegians under Hako in the vicinity. Pop. 3246.

Laridæ (lär'i-dē), the family of natatorial birds popularly known as the sea-gulls, sea-mews, or gulls, and of which the genus *Larus* is the type. See *Gulls*.

Larissa (lä'-ris-sa), a town of Northern Greece, on the river Peneus (now Salambria), the capital of Thessaly. It is the seat of an archbishopric, with a population in 1907 of 18,001. It was the rendezvous place of Julius Cæsar's army before the battle of Pharsalia.

Lark, the common name of birds of the genus *Alauda*, family Alaudidæ. They are characterized by a short, strong bill; nostrils covered with feathers; forked tongue; long, straight hind-claw; and the power to raise the feathers on the back part of the head in the form of a crest. Their distribution throughout the Old World is general, but there is no species native to America, the shore or horned lark belonging to a different genus (*Otocorys*). They are terrestrial in habit, feed upon worms, larvæ, etc., nest upon the ground, and bring forth a brood twice in the year. The best known is the sky-lark (*A. arvensis*), which is celebrated for the prolonged beauty of

its song. The wood-lark (*A. arborea*) is less common than the sky-lark, and is known by its smaller size and less distinct colors. It perches upon trees, and is found chiefly in fields near the borders of woods. It sings during the night, and on this account has been mistaken for the nightingale.

Lark-bunting, a common fringilline bird (*Calamospiza bicolor*) of the Great Plains of the United States. It resembles the bobolink in its great seasonal changes of plumage. It has an entertaining song, like that of the yellow-breasted chat, which it also resembles in singing while in flight.

Lark-finch, or lark-sparrow, a familiar brownish-gray sparrow (*Chondestes grammacus*), of the prairie and plain regions of the United States. It breeds on the ground and has a pleasant song.

Larkhall (lark'hal), a town of Scotland, in Lanarkshire, 3½ miles southeast of Hamilton. The inhabitants are employed in coal mines, bleachworks, etc. Pop. 11,879.

Lárkhána (lär-kä'nu), a town of India, in Sikárpur district, Sind, Bombay Presidency, is situated on a fertile tract of land on the south side of the Ghár Canal. Pop. 14,543.

Larkspur (lark'spur; *Delphinium*), sometimes called lark's-heel, a genus of plants of the order Ranunculaceæ, distinguished by its petaloid calyx, the superior sepal of which terminates in a long spur. The Upright Larkspur (*D. ajacis*) and the Branching Larkspur (*D. consolida*) are well-known garden flowers.

Larksville, a borough in Luzerne County, Pennsylvania, 3 miles W. by N. of Wilkes-Barre. In a coal-mining region. Pop. 9288.

Larnaca (lär'nä-kä), or LAR'NICA (ancient *Citium*), a town on the [illegible] coast of the island of Cyprus, on a [illegible] plain about 1 mile from the shore. It is the chief commercial center in the island. Since the British occupation in 1878 the place has become of more importance. Pop. 7964.

Larne (lärn), a seaport of Ireland, County Antrim, 18 miles north by east of Belfast. The bleaching of linen is extensively carried on, and there are large flour-mills. The harbor, about a mile below the town, is one of the best in the east coast. Larne is much resorted to during summer as a watering-place. Pop. 4716.

La Rochefoucauld (rōsh-fō-kō), FRANÇOIS, DUC DE, PRINCE DE MARSILLAC, a distinguished courtier and man of letters under Louis XIV, was born at Paris in 1613; died in 1680. He was a distinguished military officer attending the court of Louis XIII, but being suspected by Richelieu of favoring the party of Queen Anne of Austria he was exiled to Blois. Returning when the cardinal died, but not receiving the reward which he anticipated, he took the side of the Parliament in the Civil war, and was wounded in the Faubourg Saint-Antoine of Paris. Abandoning his military career, he began to cultivate literature and a social intercourse with Boileau, Racine, Molière, Madame de Sévigné and Madame de la Fayette. His *Mémoires*, published in 1662, and his *Réflexions ou Sentences et Maximes Morales*, published anonymously in 1665, were the fruits of his literary activity. The latter work, for its great brilliancy of style, is still considered a French classic.

La Rochejaquelein (rōsh-zhäk-lan), HENRI DU VERGIER, COMTE DE, a celebrated chief of the Vendean royalists, was born in 1772. During the French Revolution he put himself at the head of the peasants of La Vendée, and gained sixteen victories in ten months. At the age of twenty-two he was shot by a republican soldier in the battle of Nouaillé, March, 1794. He was one of the most sincere and courageous of the French royalists.

La Rochelle. See *Rochelle*.

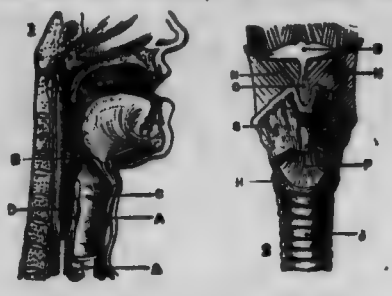
Larva (lar'va), the term applied in natural history to the first stage in the metamorphosis of insects, and certain other of the lower invertebrates. In insects it is equivalent to the grub or caterpillar stage. Many of the crustacea, as crabs and barnacles, and even vertebrata, as the frogs and newts, pass through larval forms. The larval crab was for long described as a distinct crustacean with the name of *Zoëa*. See *Metamorphosis*.

Laryngitis (lär-in-ji'tis), inflammation of the mucous membrane lining the larynx. It may be acute or chronic. The first usually arises from a cold.

Laryngoscope (la-ring'a-skōp), a contrivance for examining the larynx and commencement of the trachea. It consists of a plane mirror introduced into the mouth, and placed at such an angle that the light thrown on it from a concave reflector, in the center of which is an aperture, is made to illuminate the larynx, the image of which is again reflected through the aperture in the reflector to the eye of the observer.

Laryngoscopy (lâ r-i n-gos'cō-pi), the science and art of examining a larynx by the laryngoscope (see above) or through a tube (Kirstein's autoscope).

Larynx (lâr'inkz), the organ by aid of which the voice is produced, situated at the upper part of the trachea or windpipe. The larynx is formed mainly of two pieces of cartilage, called the *thyroid* and the *cricoid*, one placed above the other. The thyroid is formed of two extended wings meeting at the middle line in front in a ridge; above



Larynx internally (1) and externally (2).

and from the sides two horns project upwards, which are connected by bands to the hyoid bone, from which the larynx is suspended. The thyroid cartilage rests and is movable upon the cricoid, moving backwards or forwards, but not from side to side. The cricoid cartilage is shaped like a signet-ring (Greek *krikos*, a ring), the narrow part of the ring being in front. The cricoid carries, perched on its upper edge behind, the *arytenoid* cartilages, which are of great importance in the production of the voice. These various cartilages form a framework upon which muscles and mucous membranes are disposed. The mucous membrane which lines the larynx is thrown into various folds. These folds are called the *true* vocal cords, and by their movements the voice is produced. They are called *true*, as distinct from the *false* vocal cords which are above them, but take no part in producing the voice. The true vocal cords projecting towards the middle form a chink, which is called the glottis. By the contraction of various muscles this chink can be so brought together that the air forced through it throws the edges of the membrane into vibration and so produces sounds. Variations in the form of the chink will affect changes in the sound. Thus the production of voice is the same as in musical instruments, the arrangements in the larynx being such as to produce (1) the vibratory sounds, (2) to regulate the sound, (3) to vary the pitch, and (4) to determine the quality of the sound. The rapid, delicate, muscular movements involved are produced by nervous stimuli reaching the muscles from the brain. Thus the voice is produced in the larynx, and is modified by the rest of the respiratory passages. (See *Voice*.) In the act of swallowing, the glottis is covered by a cartilaginous plate called the *epiglottis*. In the accompanying cut, fig. 1 shows C the larynx internally, B being the epiglottis situated above the glottis or entrance to the larynx, A A the trachea, and D the œsophagus or gullet. In fig. 2 J is the trachea, B the hyoid bone, N N the thyro-hyoid membrane, O the thyro-hyoid ligament, G the thyroid cartilage, H the cricoid cartilage, P the crico-thyroid ligament.

La Salle (lâ-sal'), a city of La Salle County, Illinois, on the north bank of the Illinois River, 99 miles southwest of Chicago. Steamboats ascend the river to this place, which is the terminus of the Illinois and Michigan Canal. It has zinc smelting works and rolling mills, clock factories, Portland cement plants, sheet metal and nickeloid works, plow and wheel, and pressed brick plants. Large deposits of bituminous coal are extensively mined. Pop. 12,500.

La Salle, ROBERT CAVALIER DE, a famous French explorer, born at Rouen in 1643, emigrated to America in 1667, and made long fur-trading excursions among the native tribes. In 1675, appointed governor of Fort Frontenac, he built a vessel on Lake Erie, sailed through Lakes Huron and Michigan, and in 1682 descended the Mississippi in canoes to its mouth. In 1684 he attempted to found a French colony at the mouth of the Mississippi, but missed the location and landed in Texas. Attempting to proceed to Canada overland he was murdered in 1687 by mutinous companions. He was one of the most adventurous and daring of the explorers of America.

Las Casas (las käs), BARTOLOMÉ DE, a Spanish prelate, known as the 'Apostle of the Indians,' born in 1474; died in 1556. He accompanied Columbus to Hispaniola in 1498, and on the conquest of Cuba received charge as priest there, and distinguished himself for his humane treatment of the natives. In his zeal for the Indians he returned to Spain several times and obtained decrees in their favor, which, however, were of little avail. In the cause of religion he visited various parts of the New World, including Mexico, Guatemala, Peru, etc. In 1542 he wrote his famous *Brevissima*

Relacion de la Destruction de las Indias. His untiring labors were productive of good to the natives, yet it is a singular fact that he proposed to purchase negroes in order to supply the Cuban planters with African laborers instead of the Indians. He was made bishop of Chiapas in 1544, but resigned this dignity in 1547, his humane efforts being fustrated. He died at Madrid.

Las Cases (läs käs), EMMANUEL AUGUSTE DIEUDONNÉ MARIN JOSEPH, COMTE DE, a French writer, born in 1766; died in 1842. Employed before the revolution as a lieutenant of marines, he afterwards retired to England, where he supported himself by private teaching. Returning to France, he employed himself upon his *Atlas Historique*, published under the name of Le Sage. Coming under the notice of Napoleon, he was by him made baron and minister of state. After Waterloo he shared Napoleon's imprisonment in St. Helena, where the emperor dictated part of his *Memoirs* to Las Cases, and took lessons from him in English. Removed to the Cape of Good Hope from St. Helena for sending out a secret letter, he was permitted to return to France after Napoleon's death, where he published the *Mémorial de St. Hélène* in his *Atlas Historique.*

Laserpitium (lā-ser-pi'shi-um), a genus of plants, nat. order Umbelliferæ, containing about twenty species, natives of Europe, North Africa and West Asia. They are tall, perennial, herbaceous plants, with pinnate leaves and compound, many-rayed umbels of yellowish or white flowers, the fruit with eight wing-like appendages. Some of them are natives of mountainous districts of Europe, and have tonic and other medicinal properties.

Lasher. See *Fatherlasher.*

Lashkar. See *Gwalior.*

Lassa (läs'sä), or LHASSA, the capital of Tibet, situated on the Kitchu, a tributary of the Brahmaputra. All the public edifices worthy of notice are connected with the Buddhist religion, Lassa being the great center of Buddhism, and being greatly resorted to from China, Turkestan, Nepaul, etc., as a school of philosophy and Buddhism. About 1½ miles northwest from the city is the Bottala or Buddha-la, the residence of the Dalai (Grand) Lama, the ecclesiastical sovereign of Tibet, and supreme pontiff of the vast regions forming Central, Eastern, and Southeastern Asia. A triple-peaked hill here rises abruptly out of the plain to the height of 367 feet; it is covered with convents and cells of monks, and in the center is the palace of the Dalai Lama, a fine edifice, four stories in height, with a vast number of apartments and a large dome. It has recently been occupied by Chinese troops, and the Lama, who sought the sovereignty of Tibet, is in exile. Lassa is the principal emporium of Tibet; silk stuffs, tea, and other articles being here exchanged for Tibetan, Indian and European goods. Pop. estimated at 10,000.

Lassalle (läs'sal-lē), FERDINAND, a notable German socialist, born at Breslau in 1825, of Jewish parents; studied at Berlin University; first made himself known as a leader during the democratic troubles of 1848, and was imprisoned for a year. In 1861 he published his *System of Acquired Rights.* Thereafter he proceeded to organize the working classes, which caused the government to accuse him of sedition, and he was imprisoned for four months. In May, 1863, he founded a Labor Union, and began that socialist propaganda which has since become so widespread in Germany. In the summer of 1864 he sought rest in Switzerland, and was there killed in a duel occasioned by a love affair. His best-known treatise is the famous *Program for the Working Classes.*

Lasso (las'ō), a contrivance used in Spanish America and the Western United States, consisting of a long rope of plaited raw hide, at one end of which is a small metal ring. By means of this ring a noose is readily formed, and the lasso, or lariat, is then used for catching wild cattle, the rope being cast over the animal's head or leg while the hunter is in full gallop.

Lasso, ORLANDO DI (*Orlandus Lassus*), one of the great musicians of the sixteenth century, born at Mons in Hainaut in 1520 or 1530; died in 1594. He traveled in England and France, and was appointed chapel-master at Munich. A collection of his works was published at Munich (1604) under the name of *Magnum Opus Musicum.*

Lastrea (las-trē'a), a genus of ferns containing the male-fern, etc.

Lât, a name given to pillars common to all the styles of Indian architecture. With the Buddhists they bore inscriptions on their shafts, with emblems or animals on their capitals. They are among the most original and often the most elegant productions of ancient Indian architecture.

Latakia (lat-a-kē'a), or LADIKI'A (anciently *Laodicea ad Mare*), a seaport in Syria, 70 miles north

of Tripoli, on the Mediterranean. The harbor is well sheltered, though shallow, and there is a considerable trade in silk and cotton, while Latakia tobacco is famous throughout Europe. Pop. about 22,000.

Lateen Sail (la-tēn'), is a triangular sail used in xebecs, felucca, etc., in the Mediterranean, and in the dahabiehs of the Nile. It is extended by a *lateen* yard, which is slung across a mast so as to make an angle of about 45 degrees with it, the lower portion of the yard being about a third of the whole.

Latent Heat, that portion of heat which exists in any substance without producing an effect upon another or upon the thermometer; termed also *insensible* as distinct from *sensible heat.* It becomes sensible during the conversion of vapors into liquids, and of liquids into solids; and on the other hand a portion of sensible heat disappears or becomes *latent* when a body changes its form from the solid to the liquid, or from the liquid to the gaseous state.

Lateran (lat'er-an), one of the historic churches at Rome, built originally by Constantine the Great, and dedicated to St. John of Lateran. It is the episcopal church of the pope, and the principal church of Rome. It has a palace and other buildings annexed to it. Every newly-elected pope takes solemn possession of the church, and from its balcony the pope bestows his blessing on the people. The site on which the buildings of the Lateran stand originally belonged to a person named Plautius Lateranus, who was put to death by Nero; hence the name.

Lateran Councils, councils of the Roman Catholic Church, so called because they were held in the Lateran Church in Rome. There were eleven such councils, five of which were ecumenical, the most important being that convened by Alexander III, March 2, 1179, which established the form under which the popes are elected, and that called by Innocent III in November, 1215, which ordered the Crusade, condemned the Waldenses, and called the mystery of the eucharist transubstantiation.

Latham (lā'tham), ROBERT GORDON, an English scholar, born in 1812; died in 1888. He was educated at Eton and Cambridge; was graduated in 1832, and resided for some time in Denmark and Norway. He adopted the profession of medicine, and became physician to Middlesex Hospital, having been previously appointed to the chair of English language and literature in University College. His name is chiefly associated with researches in philology and ethnology. His best-known works are: *History of the English Language; Handbook of the English Language; Natural History of Man; The Varieties of Man; Descriptive Ethnology; The Ethnology of Europe;* and a new edition of *Todd's Johnson's Dictionary.*

Lathe (lāth), a machine for turning and polishing flat, round, cylindrical, oval, and every intermediate form of body in wood, ivory, metals, etc., the object worked on receiving a rotary motion; it is also used in glass-cutting and earthenware manufacture. It may be turned by the hand, the foot, steam-power, water, etc. A *duplex lathe* is one which works on two turning tools at once; *Blanchard's lathe* is one for turning objects of an irregular form, as lasts, gunstocks, etc. A *throw-lathe* is one in which the mechanic drives the lathe with one hand, holding the cutting tool with the other. The term is also applied to the batten or lay of a loom in which the reed is fixed, and by the movements of which the weft-threads are laid parallel to each other, shot after shot, in the process of weaving.

Lathyrus (lath'e-rus), a large genus of plants, natives of the northern hemisphere and of South America, nat. order Leguminosæ. Many are ornamental, such as the sweet-pea (*L. odorātus*) and the everlasting-pea (*L. latifolius*), and some useful as agricultural plants.

Latimer (lat'i-mẽr), HUGH, an English prelate, reformer and martyr, born about 1490. He entered Cambridge University about 1505, and became M.A. in 1514. He took holy orders, and by and by began to preach Protestant doctrine, which led to vigorous opposition. He was made chaplain to Henry VIII in 1530, and during the ascendency of Anne Boleyn in 1535 he was appointed bishop of Worcester. In 1538 he resigned his bishopric, not being able to accept the Six Articles, and was put in prison, but on the accession of Edward VI he was released and became highly popular at court. This continued until Mary ascended the throne, when Latimer was cited to appear, along with Cranmer and Ridley, before a council at Oxford, and condemned. After much delay and a second trial, Latimer and Ridley were burned at the stake, Oct. 16, 1555. His preaching was popular in his own time for its pith, simplicity and quaintness.

Latin Church, the Roman Catholic Church.

Latin Empire. See *Byzantine Empire.*

Latin Language and Literature. See *Rome.*

Latins (la'tins; *Latini*), the ancient inhabitants of Latium, in Italy. In very early times the Latins formed a league of thirty cities, of which the town of Alba Longa, said to have been built by Ascanius, the son of Æneas, became the head. Rome was originally a colony of Alba, and thus the language of the Romans is known as the Latin language.

Lati'nus. See *Æneas.*

Latitude (lat'i-tūd), in geography, the distance of any place on the globe north or south of the equator

Parallels of Latitude.

measured on its meridian. It is called *north* or *south* according as the place is on the north or south of the equator. The highest or greatest latitude is 90°, that is, at the poles; the lowest or smallest 0°, at the equator, between which and the poles any number of parallel circles called *parallels of latitude* may be supposed to be drawn. One method of finding the latitude of a place is by measuring the altitude of the pole-star. When the latitude and longitude of a place are given its position on a map is easily found. See *Longitude.*

Latitudinarians (lat-i-tū-di-nā'ri-ans), a term applied to certain broad church English divines of Charles II's time. They endeavored to allay the contests that prevailed between the Episcopalians on the one hand, and the Presbyterians and Independents on the other, and also between Arminians and Calvinists. At present it generally denotes one who commends or sanctions deviations from the strict principles of orthodoxy.

Latium (lā'shi-um), the ancient name applied to a district of Central Italy on the Tyrrhenian Sea, extending between Etruria and Campania, and inhabited by the Latins, Volsci, Æqui, etc.

Latona (lā-tō'na; by the Greeks called *Lētō*), in Greek mythology, the mother of Apollo and Artemis. Latona is represented as a mild, benevolent goddess, in a sea-green dress. She was worshipped chiefly in Lycia, Delos, Athens, and other cities of Greece.

Latour D'Auvergne (lā-tōr dō-var-ny), THÉOPHILE MALO DE, a French soldier, born in 1743. Entering the military service in 1767, he became aide-de-camp to the Duke of Crillon, and distinguished himself at the siege of Mahon. When the revolution began he was a captain of grenadiers, refused higher positions, and was named *First Grenadier of France* by Napoleon. He commanded a corps of 8000 men, which was known as the *infernal column.* In 1799 he fought under Masséna in Switzerland, and fell at Neuburg, June 27, 1800.

La Trappe (lā-trap), a Cistercian abbey of Northern France, situated in a narrow valley of Normandy, 30 miles northeast of Alençon. Founded in 1140, it had become in the seventeenth century a haunt of licentious monks known as 'the bandits of La Trappe.' In the seventeenth century, however, the abbot Armand Jean le Bouthelier de Rancé instituted a vigorous reform, and caused the monks to adopt a life of severe asceticism. The austere Trappists prayed eleven times daily, spoke no word to each other except the salutation of *Memento mori*, fed upon fruit and pulse, and every evening dug their own graves. At the revolution the Trappists were obliged to leave France, but at the restoration they returned to their old homes, though expulsions took place again in 1880. La Trappe had hitherto been head monastery of the order, and they have also establishments in various parts of Europe, and in America. The professed brothers wear a dark-colored frock, cloak and hood, which covers the whole face. A female order of Trappistines was founded by Louisa, Princess of Condé.

Latreille (lā-trā-yé), PIERRE ANDRÉ, a French zoologist, born in 1762; died in 1833. He was professor of entomology in the Paris museum, and a member of the Academy of Sciences. His writings, which are very numerous, include among others natural histories of salamanders, apes, reptiles, etc., the *Natural Families of the Animal Kingdom,*

Genera of Crustacea and Insects, and a *Course of Entomology*.

Latria. See *Dulia*.

Latrobe (la-trōb'), a borough in Westmoreland County, Pennsylvania, 41 miles E. S. E. of Pittsburgh. It is in a coal-mining district and has numerous large collieries and coke furnaces, also steel, glass, paper and lumber mills. Pop. 8777.

Latrobe (la'trob), BENJAMIN HENRY, born in England in 1763; died in the United States in 1820. He emigrated to America in 1795, was employed as engineer by the State of Virginia, and was architect of the United States Bank in Philadelphia and the first Hall of Representatives in Washington. —His son, JOHN HAZLEHURST (1803-91), was active in forming the colony of Liberia, originated the park system of Baltimore, and was the author of numerous works of fiction, travel, biography, etc.

Latten (lat'en), a fine kind of brass or bronze anciently used for crosses and candlesticks, brasses of sepulchral monuments, etc. That employed by English workmen used to be imported from Germany and the Netherlands, the finest kind being known as Cologne plate. Latteners formed one of the recognized crafts of the city of London. In some localities the term is still applied to plate-tin.

Lattice-girder (lat'is), a girder of which the web consists of diagonal pieces arranged like lattice-work. Lattice-bridge is the name given when the cross-framing is made to resemble lattice-work.

Lattice-leaf, LATTICE-PLANT, a very remarkable aquatic plant of Madagascar (*Ouvirandra fenestrālis*), by some referred to the nat. order Juncaginaceæ, by others to the Naiadaceæ, and noteworthy for the structure of its leaves. The blade resembles lattice-work or open needlework, the longitudinal ribs being crossed by tendrils, and the interstices between them open.

Lattice Plant (*Ouvirandra fenestrālis*).

Lauban (lou'bân), a town of Prussia, province of Silesia, on the Queis, 40 miles W. S. W. Liegnitz. It has manufactures of woolen and linen cloth, yarn, etc. Pop. 14,624.

Laud (lâd), WILLIAM, Archbishop of Canterbury in the reign of Charles I, was born at Reading in Berkshire in 1573. He was educated at St. John's College, Oxford; took priest's orders in 1601; was made chaplain to Neile, bishop of Rochester, in 1608; became president of his college and king's chaplain, and in 1617 accompanied James I to Scotland, where he attempted to enforce Episcopacy, with no success. After the accession of Charles I Laud was translated to the see of Bath and Wells, and in 1628 to that of London, while his influence seemed to increase. In 1630 he was elected chancellor of the University of Oxford, which he enriched with a valuable collection of manuscripts, establishing also a professorship of Arabic. In 1633 he was promoted to the see of Canterbury. In 1634 he instituted rigorous proceedings against all who would not conform to the Church of England. By means of spies he hunted out the Puritans, and sought to extinguish all forms of dissent by means of fines, imprisonment and exile. He prosecuted Prynne, Burton and Bastwick for libel, and to him is attributed the severe sentences which they received. When the Long Parliament met (1640) the archbishop was impeached for high treason at the bar of the House of Lords by Denzil Holles and committed to the Tower. After three years he was brought to trial, but the lords deferred giving judgment. The House of Commons, however, passed a bill of attainder (January, 1644), declared him guilty of high treason, and condemned him to death. Accordingly he met his end on the scaffold at Tower Hill with great firmness. An edition of his works was published by Parker (Oxford, 1857-60).

Laudanum (lą'da-num), tincture of opium, a 10 per cent. alcoholic solution. See *Opium*.

Lauder (lą'der), SIR THOMAS DICK, a Scottish writer, born in 1784; died in 1848. In early life he entered the army, but quitted it in favor of science and literature. He contributed papers to the Edinburgh Royal Society, and in 1817 wrote a tale called *Simon Roy*, which was attributed to the author of *Waverley*. He then tried historical romance in *Lochandhu* and the *Wolf of Badenoch*. In addition to these works are his *Account of the Moray Floods in 1829*; *Highland Rambles and Long Tales*

to *Shorten the Way*; editions of *Gilpin's Forest Scenery*, and *Sir Uvedale Price on the Picturesque*; a *Tour Round the Coasts of Scotland*; and the *Queen's Visit to Scotland in 1842*.

Lauderdale (lą'der-dăl), JOHN MAITLAND, DUKE OF, born at Lethington, in Scotland, in 1616; died in 1682. He entered public life as a zealous Presbyterian, and was a party to the delivery of Charles I to the English army at Newcastle. Subsequently, he secretly undertook to raise an army in favor of the king, and tried to induce the Prince of Wales to accept the command, but without success. When in 1650 Charles II embarked for Scotland, he was accompanied by Lauderdale, who was taken prisoner at the battle of Worcester, and was not set at liberty till the Restoration in 1660. He received great favor from the restored king, and the government of Scotland was almost entirely placed in his hands. This power he used with unscrupulous rigor in his efforts to force Episcopacy upon his former Presbyterian friends. As a reward for his zeal and subserviency he was created Duke of Lauderdale (1672) and raised to the English peerage as Viscount Petersham and Earl of Guildford (1674), being later one of the junta known as the Cabal. As a result of his tyrannical conduct an address was presented to the House of Commons praying that he might be removed from all his offices. This was granted, and the disgraced duke died in a few months afterwards.

Lauenburg (lō-en-bŏrg'), or SAXE-LAUENBURG, formerly a duchy of Denmark, but ceded to Prussia in 1864.

Laughing-gas (laf'ing), nitrous oxide, or nitrogen monoxide, or protoxide of nitrogen; so called because, when inhaled, it usually produces exhilaration. See *Nitrogen*.

Laughing Jackass, or GIANT KINGFISHER (*Dacēlo gigas*), a bird allied to the kingfisher, deriving its former title from the singularly strange character of its cry. It is an inhabitant of Australia, being found chiefly in the southeastern portion of that country. It makes no nest, but deposits its eggs in the decayed hollow of a gum-tree. In length about 18 inches, it has a dark-brown crest, its back and upper surface is olive-brown, wings brown-black, and the breast and under portions white, crossed by faint bars of pale brown. The tail is longish, with a rounded extremity, tipped with white; its color is a rich chestnut, with deep black bars.

Although it is one of the true kingfishers it is often found in the great arid plains of Australia far from any streams that are sufficiently large to harbor fish. The giant kingfisher is content with crabs or reptiles or insects and small mammalia. It is the first to welcome the approach of dawn with its singular, dissonant, abrupt, hysterical laugh, which is even more startling than the hyena's. From its early rising habits and its piercing summons, it has been called the Settler's Clock. The natives call it Gogobera, which means the chorus of demons. A naturalist says: 'The laughing jackass is the bushman's clock, and being by no means shy, of a companionable nature, a constant attendant about the bush tent, and a destroyer of snakes, is regarded as a sacred bird.'

Laughter (laf'tĕr), the outward expression of a certain emotion or excited condition of the nervous system, manifested chiefly in certain convulsive and partly involuntary actions of the muscles of respiration, by means of which the air, being expelled from the chest in a series of jerks, produces a succession of short abrupt sounds; certain movements of the muscles of the face, and often of other parts of the body also taking place. Laughter is generally excited by things which are of a ridiculous or ludicrous nature, the ultimate cause being usually attributed to the perception of some incongruity, though mere incongruity is not always sufficient. It may also be caused, especially in the young, by tickling; it also accompanies hysteria, and sometimes extreme grief.

Launce (lăns), a name common to two species of fishes, otherwise called sand-eels. They have their name from their lance-like form. See *Sand-eel*.

Launceston (lăns'ton), a town of England, county of Cornwall, 19 miles north by west of Plymouth. Its chief interest is in its antiquity, it having an interesting Gothic church and ruins of an old Norman castle and an Augustinian priory. Pop. (1911) 4117.

Launceston, the second town of Tasmania, by rail 120 miles north of Hobart, at the confluence of the North and South Esk rivers with the Tamar, which is navigable up to the town from the sea at Port Dalrymple, a distance of 40 miles. Among the buildings are a government house, town hall, military barracks, jail and courthouse. There are also public schools, banks, post-office and several newspaper establish-

ments. It has an important trade with South Australia and Tasmania. Pop. (1911) 23,726.

Lauraceæ (lą-ra'se-ē), the laurel family, a nat. order of apetalous exogens, consisting entirely of trees and shrubs inhabiting the warmer parts of the world, and in most cases aromatic. Cinnamon, cassia, sassafras and camphor are products of the order. The best-known species is the *Laurus nobilis*, laurel or sweet-bay.

Laureate (lą're-āt), POET, a designation first applied to poets who were honored by the gift of a laurel wreath. It is now the name of an official connected with the royal household of Great Britain, the patent for which appears to have been granted by Charles I, 1630, although Ben Jonson and others are said to have held the title previously. It was the chief duty of the laureate to furnish an ode on the birthday of the king or upon the occasion of a national victory, the emolument attached to the office being £100 a year with a tierce of canary. Since the reign of George III there have been no special duties connected with the office. From the time of Charles II the following poets have in succession held the office of laureate: John Dryden, Nahum Tate, Nicholas Rowe, Lawrence Eusden, Colley Cibber, William Whitehead, Thomas Warton, Henry James Pye, Robert Southey, William Wordsworth, Alfred Tennyson, Alfred Austin and Robert Bridges.

Laurel (lor'el), a plant belonging to the genus *Laurus*, nat. order Lauraceæ, to which it gives the name. The sweet-bay or laurel (*Laurus nobilis*) is a native of the north of Africa and south of Europe, and is cultivated in gardens not only on account of its elegant appearance, but also for the aromatic fragrance of its evergreen leaves. The fruit, which is of a purple color, and also the leaves, have long been used in medicine as stimulants and carminatives. The common or cherry-laurel is *Cerasus laurocerasus*, the Portugal laurel *Cerasus lusitanica*, the spurge-laurel *Daphne Laureola*, but these are very different from the true laurel. (See the articles.) The name is also given to other plants, as in the United States to two species of *Kalmia*, the mountain laurel and common laurel. In ancient times heroes and scholars were crowned with wreaths of bay leaves, whence the terms *laurels* in sense of honors (and similarly *bays*), and *laureate*. From the fruit of the sweet-bay or laurel several oily substances have been extracted. Thus there is the *oil of laurel*, a yellowish oil with an odor of laurel and a strong bitter taste; *laurel fat*, a yellowish-green buttery substance, used for embrocations in rheumatism, paralysis, deafness, etc. The cherry-laurel also yields a volatile poisonous oil. From the leaves of the cherry-laurel *laurel-water* is produced by distillation.

Laurel, a city in Jones County, Mississippi, 7 miles N. E. of Ellisville. Its chief industry is the manufacture of lumber, though wagons, cotton and fertilizer are also produced. Pop. 12,500.

Laurens (lär'ens), HENRY, revolutionary patriot, was born in Charleston, South Carolina, in 1724; died in 1792. In the Revolution he was president of the Council of Safety, and of the Continental Congress. In 1779 he was minister to Holland, but falling into the hands of the British he was a prisoner in the Tower of London for 15 months. He was Peace Commissioner in 1781, and signed the preliminary treaty in Paris, with Jay and Franklin.—JOHN, son of Henry, was confidential aide to Washington. At Yorktown he received the sword of Cornwallis. He was but 29 years of age when he died.

Laurentian (lą-ren'shi-an), in geology, a term applied to a series of stratified and crystalline rocks of gneiss, mica-schist, quartzite, serpentine and limestone, about [illegible]000 feet in thickness, lying northward of St. Lawrence in Canada. The Laurentian apparently lies below the fossiliferous horizon, its one supposed fossil, the *Eozoon Canadense*, being now regarded as a mineral concretion. (See *Eozoon*.) The terms *Archæan* and *Pre-Cambrian* are used in Britain for rocks occupying a similar position to the Laurentian. See *Geology*.

Laurentian Mountains, a range in Canada extending for over 3000 miles from Labrador to the Arctic Ocean, forming the watershed between Hudson Bay, the St. Lawrence and the great lakes, and dividing the same bay from the sources of the Mackenzie River. The average elevation is about 1500 feet, while some of the peaks attain a height of 4000 feet.

Laurier (lō-ri-ā), SIR WILFRID, born at St. Lin, Quebec, in 1841; called to the bar in 1864; took up journalism and politics in 1867, and soon acquired a high reputation as writer and orator. He entered the Quebec legislature in 1871, the Dominion parliament three years later, and the Mackenzie cabinet in 1877. Ten years later he succeeded Edward Blake as leader of the Liberal party, which he carried to victory in 1896, and was at once asked to form

a ministry. He remained Premier of Canada until 1911, when he was defeated in the contest for reciprocity in trade with the United States. Died Feb. 17, 1919.

Laurium (lą'ri-um), a village of Houghton County, Michigan, in the extreme N. W. of the State, and on the Mineral Range and Copper Range R. Rs. It is in one of the richest copper ore regions of the United States. Pop. 8587.

Laurium, a promontory and hill range of Attica, Greece, formerly famous for its silver and lead mines. The working of these has been recently resumed. Cadmium and manganese are also found.

Lausanne (lō-sänn), a town in Switzerland, capital of the canton of Vaud, on the slopes of Mount Jorat, about ½ mile from the Lake of Geneva and 31 miles northeast of the town of Geneva. Lausanne is built on three hills, two of which are connected by a lofty viaduct, and the most interesting building is the Gothic cathedral, founded about A.D. 1000. Lausanne has little trade or manufactures, but it is much visited by tourists, and its educational institutions attract many foreign pupils. In 1875 it became the seat of the supreme court of the republic. Pop. (1910) 68,926.

Lausitz. See *Lusatia.*

Lava (lä'va), the general term for all rock-matter that flows, or has flowed, in a molten state from volcanoes, and which when cooled down forms varieties of tufa, trachyte, trachytic greenstone and basalt, according to the varying proportions of felspar, horn blende, augite, etc., which enter into the composition of the mass, and according to the slowness or rapidity with which it has cooled. The more rapidly this process of cooling goes on the more compact is the rock.—*Lava beds* are of two kinds, namely, *contemporaneous* and *intrusive.* A *contemporaneous lava bed* is one which has been poured out over the surface of one deposit, and covered by subsequent deposits. Such a bed is in its natural position, and usually alters only the bed beneath it. *Intrusive beds* are those which have been forced up in a molten state through or between strata, altering those on both sides.

Laval (la-val), a town of France, capital of the department of Mayenne, and on an acclivity washed by the River Mayenne, 154 miles W. S. W. of Paris. It is an interesting and picturesquely situated place; and among its principal edifices are Trinity Church (now the cathedral), the church of the Cordeliers, and an ancient castle, now a prison. The manufactures consist of damasks and other linen goods, flannels, etc. Pop. (1911) 28,540.

La Valliere (vàl-yàr), LOUISE FRANÇOISE DE LA BAUME LE BLANC DE, was born in Touraine in 1644; died 1710. The descendant of an ancient family, she was brought to court by her mother, became mistress to Louis XIV, and bore him four children. The king raised the estate of Vaujour into a duchy and a peerage in favor of her and her children. Superseded at court by Madame de Montespan, she retired to a Carmelite convent in 1674, where she died. She left a collection of letters, and a work entitled *Réflexions sur la Miséricorde de Dieu.*

Lava Millstone, a hard and coarse basaltic millstone, obtained from quarries near Andernach on the Rhine.

Lavandula (la-van'du-la), a genus of perennial undershrubs and herbs, nat. order Labiatæ, natives of dry hilly places in the Mediterranean region, the Canary Islands, Madeira, etc. See *Lavender.*

Lavater (lä-vä'ter), JOHANN CASPAR, celebrated as a physiognomist, was born in 1741 at Zürich, Switzerland, and died in 1801. He first appealed to the public as a poet in 1767, and then became pastor of a Zürich church in 1774. Lavater is best known, however, as the originator of a system by means of which, when applied to the lines and contours of the face, he claimed to be able to read the character of its owner. He adopted the idea in 1769, and published his great work under the title of *Physiognomical Fragments* (4 vols., 1775-78). This book contained many valuable engravings of distinguished people, with enthusiastic comments by the author. Later, Lavater seems to have doubted his own theory in some degree. He published several other works; was imprisoned for the boldness with which he denounced the excesses of the French revolution; was shot in the street while succoring the wounded when Zürich was captured by Masséna in 1799, and died from the effects of his wound in about a year. His work on *Physiognomy* was translated into English by Hunter (London, 1789).

Lavaur (lä-vōr), a town of France, dep. of Tarn, 23 miles southwest of Alby. Its castle was stormed in 1211 by Simon de Montfort and the refugee Albigenses were massacred. Pop. 4069.

Lava Ware, a kind of coarse ware resembling lava, made from iron slag, cast into urns, tiles, table-tops, etc.

Laveleye (lav-lā), Emile de, a well-known Belgian economist, born in 1822; educated at Bruges and Paris; published his first work in 1847, and became professor of economics at the University of Liège in 1864. He published many works on the science of economics, of which we may mention—*Etude d'Economie Rurale* (1864), *Eléments d'Economie Politique* (1882), and *Le Socialisme Contemporain.* He died in 1892.

Lavender (lav'en-der; *Lavandula vera*), a delightfully fragrant shrub 3-4 feet high, nat. order Labiatæ, a native of the south of Europe. Under favorable conditions it contains one-fourth of its own weight in camphor. It also produces a volatile oil, which is much in demand as an excellent perfume. This oil is got by distilling the flowers. It has a pale-yellow color, aromatic odor, and [illegible] taste. Besides being employed as a perfume, it is used in medicine as a stimulant in hysteria, colic, and other affections. *Spirits of Lavender* is prepared by digesting the fresh flowers in rectified spirits and distilling. *Lavender-water* is a solution of oil of lavender in spirit along with otto of roses, bergamot, musk, cloves, rosemary, etc. This preparation after standing for some time is strained and mixed with a certain proportion of distilled water. Enough oil is produced annually in England to make 30,000 gallons of lavender-water.

Laver (la'ver), a name given to two species of algæ of the genus *Porphyra*—*P. laciniata* and *P. vulgaris.* They are employed as food, salted, eaten with pepper, vinegar and oil; and are said to be useful in scrofulous affections and glandular tumors.—*Green laver* is the *Ulva latissima.* It also is employed as food, stewed and seasoned with lemon-juice, and is ordered for scrofulous patients.

Lavoisier (lā-vwā-si-ā), Antoine Laurent, a celebrated French chemist, was born at Paris in 1743. The son of wealthy parents, he was educated at the College Mazarin, studied mathematics and astronomy under Lacaille, worked in the laboratory of Rouelle, and received lessons on botany from Bernard de Jussieu. His first public distinction was to receive the prize for the best essay on lighting the streets of Paris (1766). About this period he published several treatises, traveled through France collecting material for a geological chart, became an associate of the Academy in 1768, and obtained the post of farmer-general of taxes in 1769. His wealth and position enabled him to extend his researches, and the new discoveries of Priestly, Black and Cavendish gave impetus and direction to his studies. He was the first to organise the methods of chemistry and establish its terminology. His most famous discoveries were those of oxygen gas and the chemical theory of combustion. Accused before the Convention as an ex-farmer-general, he was guillotined in 1794.

Law. See *Commercial Law, Canon Law, Civil Law, Common Law, International Law,* etc.

Law, Right Hon. Andrew Bonar, a British statesman born in New Brunswick, Canada, 1858. Settling in Glasgow, he became an ironmaster. In 1900 he was elected representative to Parliament; in 1911 he was chosen leader of the Unionist Party in the House of Commons. He took a deep interest in the tariff reform, and opposed the Home Rule bill. He was recognized as one of the ablest debaters in the House.

Lawn-tennis (lan-ten'is), a modern game, played on grass, gravel, cinder, or asphalt courts, with balls and rackets. The face of the racket consists of a net formed of tightly-strung gut. The balls are of rubber covered with white flannel, about 2½ inches in diameter, and 2 ounces in weight. For a game between two players (a single-handed game) the court is 78 feet long by 27 wide. It is divided across the middle by a net, the ends of which are attached to two posts, which stand three feet outside the court on each side. The height of the net is 3½ feet at the posts and 3 feet at the centre. At each end of the court, parallel to the net and 39 feet from it, are drawn the base-lines, the extremities of which are connected by the side-lines. Half-way between the side-lines, and parallel to them, is drawn the half-court line, dividing the space on either side of the net into two equal parts called the right and left courts. On either side of the net, at a distance of 21 feet from it, and parallel to it, are drawn the service lines. The players take up the positions on opposite sides of the net, and one of them, decided by tossing, called the server, standing with one foot behind and one foot on the base-line, serves the ball from his right court into the diagonally opposite court. The non-server is called the striker-out, and it is his business to return the ball. On either player winning the first stroke the score is called 15 for

that player; on either player winning his second stroke the score is called 30 for him; on either winning his third stroke his score is called 40; and the fourth stroke won by either player is scored game for that player. However, if both players have won three strokes, the score is called deuce; and the next stroke won by either player is scored advantage for that player. If the same player win the following stroke, he wins the game. Three-handed and four-handed lawn-tennis differ in no essentials from the game as here described.

Lawrence (la'rens), a city and one of the capitals of Essex County, Massachusetts, on both sides of the Merrimac River, 26 miles north of Boston. The principal buildings are the courthouse, opera-house, public library, etc. The river yields immense water power, and the cotton, woolen and worsted mills are among the largest in the world. There are also paper mills, and other industries. Methuen and North Andover are residential suburbs. Pop. 84,892.

Lawrence, a city, capital of Douglas County, Kansas, on the s. bank of Kansas River, 29 miles E. of Topeka. It is the seat of the University of Kansas, and the Haskell Institute for instruction of the Indians. Founded in 1854, it was a center of the Kansas disturbances of the following years and was partly burned by guerrillas in 1863. It has important manufacturing industries and large nurseries. Pop. 14,000.

Lawrence, St., a Roman deacon and martyr. During the Valerian persecution the saint was commanded to reveal the treasures of the church. For answer he collected the poor and sick and presented them as the treasure which secured heaven. For this he is said to have been burned in the year 258. His day in the Catholic Church is August 10.

Lawrence, St., one of the largest rivers in the world, which drains the great chain of N. American lakes. The streams connecting the lakes are known as the Niagara, Detroit, St. Clair and St. Mary's rivers, and the headwaters as the St. Louis, the name St. Lawrence being confined to the stream between Lake Ontario and the ocean. It receives the Ottawa, its principal auxiliary, at Montreal, as also the St. Maurice, the Saguenay, and numerous other large rivers from the north. The river is navigable for Atlantic steamers to the city of Montreal, 600 miles up, and from Montreal upwards by river and lake steamers. The rapids between Montreal and Lake Ontario are passed by means of canals, and Niagara Falls by the Welland Canal. The river's breadth between Montreal and Quebec is from ½ mile to 4 miles; the average breadth, about 2 miles. Below Quebec it gradually widens till it enters the Gulf of St. Lawrence (see next article). From the beginning of December to the middle of April the navigation is totally suspended by ice. In part of its course it forms the boundary between the United States and Canada.

Lawrence, St., Gulf of, a large inlet of the North Atlantic in British North America, forming the continuation of the estuary of the river St. Lawrence, and separated from the Atlantic chiefly by the island of Newfoundland, Cape Breton and Nova Scotia. It communicates with the ocean by the opening betwixt Newfoundland and Cape Breton, about 65 miles wide, by the Strait of Belle-Isle and the Gut of Canso. It contains numerous islands.

Lawrence, Amos, merchant, was born in Groton, Massachusetts, in 1786. In partnership with his brother Abbott a very large business was established, including manufactures. In 1831 Amos retired, and engaged in acts of beneficence, expending $640,000 for charitable purposes. He died in 1852. —His brother, Abbott, was born in Groton, Massachusetts, in 1792; in 1834 he was elected to Congress; in 1848 was candidate for vice-president, and in 1849 was minister to Great Britain. Died in 1855.

Lawrence, Sir Henry Montgomery, born at Mattura, Ceylon, in 1806. He proceeded to India in 1821 and served in the Afghan campaign of 1843. At the outbreak of the mutiny he was made commander-in-chief of the province of Oude; having retired to the residency of Lucknow, he organized the defense, but was killed by a shell, July 2, 1857.

Lawrence, James, naval officer, born at Burlington, New Jersey in 1781, entered the navy as midshipman in 1797, and was with Decatur as first lieutenant in the engagement against Tripoli. As captain of the *Hornet* in 1813, he captured the *Peacock* in a 15-minute fight. Put in command of the frigate *Chesapeake*, he was challenged to fight by the *Shannon* while lying at Boston and partly equipped. He put to sea in this condition, with the result that his ship was taken and he mortally wounded. He won lasting fame by calling out, while being carried below, 'Don't give up the ship!'

Lawrence, John Laird Mair, Lord, Governor-general of In-

dia, born in Yorkshire in 1811; died in London in 1879. Educated at the college of Haileybury, he went to India in 1829, where his rare administrative ability attracted attention, and caused him to receive the appointment of chief-commissioner of the Punjab in 1853, after he had served in minor posts. The wisdom of this appointment was demonstrated during the Indian Mutiny of 1857. He was known as the savior of India, and was made governor-general in 1863.

Lawrence, SIR THOMAS, English portrait painter, Royal Academy, was born at Bristol in 1769. In 1792 he was appointed painter to the king, and was knighted in 1815; and on Benjamin West's death in 1820 he succeeded him as President of the Royal Academy. He died in London in 1830. Lawrence was by far the favorite portrait painter of his time, but his work, in spite of its elegance and taste, scarcely rises above the conventional level.

Lawrence, WILLIAM BEACH, an American jurist, born in New York City in 1800; died in 1881. He was called to the bar in 1823. Diplomatic appointments took him abroad, 1826–30, but on his return he resumed law practice in partnership with Hamilton Fish. He attained eminence as an economist and pleader, and was one of the promoters of the Erie R. R. His later years brought him distinction in international law, a subject on which he wrote and lectured extensively. His *Lectures on Political Economy* (1832), *The Law of Charitable Uses* (1845), and *Administration of Equity Jurisprudence* (1874) are among his chief works.

Lawrence Strike, one of the most notable labor events of recent years, lasting from January 11 to March 14, 1912, and ending in victory for the workers. During that time some 20,000 hands were idle. The immediate cause was the reduction in pay made when the 54-hour law went into effect. More than 200,000 textile workers throughout New England received more pay as a result.

Lawton, a city, county seat of Comanche County, Oklahoma, in a rich agricultural country. It has water for irrigation and an adjacent oil and gas field. Pop. 8000.

Lawsonia (lą-sō'ni-a), a genus of plants belonging to the natural order Lythraceæ, containing only one species (*L. alba*), which is widely cultivated, especially in oriental regions. It is the plant from which henna is obtained. It is a tall, slender shrub, with a profusion of small, white, fragrant flowers; it is sometimes spiny, and in this state has been described under the name of *L. spinosa;* when without spines it has been called *L. inermis.* See *Henna.*

Lawson's Cypress (*Cupressus Lawsoniana*), a species of cypress found in the valleys of Northern California, where it grows to the height of 100 feet. It was introduced into Britain in 1852, and has become a favorite in ornamental grounds. The branches are numerous and are drooping, slender, and regularly disposed, forming a symmetrical columnar mass of rich green spray.

Lawton (lą'ton), HENRY W., soldier, was born in Ohio in 1843. He served through the Civil war and enlisted in the regular army in 1866 as second lieutenant. In the Spanish war he served at Santiago as brigadier-general, and in 1899 was sent to Manila. Here he took an active part in the fighting and was killed in an engagement at San Mateo, December 21, 1899.

Layamon (lā'ā-mon), also called LAWEMAN, author of the *Brut*, a metrical chronicle of Britain from the arrival of Brutus to the death of King Cadwalader in A.D. 689, flourished soon after 1200 A.D. From his own account he was a priest, and resided at Ernley, near Radstone, or Redstone, now Lower Arley, on the Severn, in Worcestershire, where he seems to have been employed in the services of the church. Layamon's *Brut* is mainly an amplified translation of the French *Brut d'Angleterre* of Wace, itself merely a translation with additions from Geoffrey of Monmouth's *Historia Britonum*, and that again confessedly a translation from a Welsh or Breton original. Layamon's work appears to have been completed in the first years of the thirteenth century. Its value is chiefly linguistic.

Layard (lā'ärd), SIR AUSTIN HENRY, an English traveler, archæologist and diplomatist, was born in 1817 of a family originally French, and was partly educated in Italy. In 1839 and following years he traveled in the East, and in 1845 began his celebrated excavations on the site of ancient Nineveh, publishing the results of his discoveries in 1849-53. He was appointed attaché to the British embassy at Constantinople in 1849. In 1852 he entered Parliament in the Liberal interest; became under-secretary for foreign affairs in 1860, commissioner of works in 1869, and ambassador to the Porte in 1877 under Lord Beaconsfield's government, when

he accomplished the annexation of Cyprus. He is best known by his books: *Nineveh and its Remains* (1849) and *Discoveries in the Ruins of Nineveh and Babylon* (1853). Died in 1894.

Laybach. See *Laibach.*

Lay Brothers, are an inferior class of monks employed as servants in monasteries. Though not in holy orders, they are bound by the three monastic vows of poverty, chastity and obedience. They wear a dress somewhat different from that of the other monks. In nunneries a similar distinction prevails between the nuns proper and the lay sisters.

Layering (lā'ĕr-ing), in gardening, the propagation of plants by bending the shoot of a living stem into the soil, the shoot striking root while being fed by the parent plant. The figure shows the branch to be layered bent down and kept in the ground by a hooked peg, the young rootlets, and a stick supporting the extremity of the shoot in an upright position.

Layering.

Lay-figure, a jointed human figure used by painters, made of wood or cork, which can be placed in any attitude, and serves when clothed as a model for draperies, etc.

Laynez (lī-neth'), JACOBO, second general of the Jesuits, born in Castile in 1512; died in 1565. He was educated at the University of Alcala, and from that he went to Paris, where he made the acquaintance of Ignatius Loyola. Laynez was ordained priest in Venice 1537, and while there he and Loyola formed the project of establishing the Society of Jesus. After the order had been confirmed by Paul III (1540), and Loyola, at the request of Laynez, had been appointed the first general, he made many journeys for the purpose of extending the society of the Jesuits, and in 1558 he succeeded Loyola as general of the order.

Lazaretto (laz-ĕr-et'tō), a public building, hospital, or pest-house, for the reception of those afflicted with contagious diseases. It is more particularly applied to buildings in which quarantine is performed. See *Quarantine.*

Lazarists (laz'ar-ists), or PRIESTS OF THE MISSION, an order of priests founded at Paris by St. Vincent de Paul in 1625 for the purpose of supporting missions and of ministering to the spiritual wants of the poor. The foundation was confirmed by letters-patent of Louis XIII, May, 1627, and the missionaries were erected into a congregation by Pope Urban VIII in 1631. They have houses in all quarters of the world.

Lazulite (laz'ū-lit), blue-spar, a phosphate of aluminium, magnesium and iron, a mineral of a light or indigo-blue color, crystallizing in oblique, four-sided prisms.

Lazzaroni (laz-a-rō'ne), a class of persons in Naples without employment or home, and having no settled means of support. The name is said to be derived from that of Lazarus in the parable, though it is more directly connected with the hospital of St. Lazarus, which served as a refuge for the destitute of the city. For a long time they played an important part in all Neapolitan revolutions, and under Masaniello accomplished the revolt of July 7, 1647, against the Duke d'Arcos. They are now no longer a separate class.

Lea (lē), HENRY CHARLES, historian, son of Isaac Lea, was born at Philadelphia in 1825, became a publisher, and wrote *Superstition and Force, History of Sacerdotal Celibacy, Studies in Church History* and *History of the Inquisition in the Middle Ages,* works which gave him an international reputation. He died in 1909.

Lea, ISAAC, naturalist, born at Wilmington, Delaware, in 1792. He engaged in the publishing business with his father-in-law, Matthew Carey, and became an ardent student of conchology, his writings on this subject being of high value. He was made president in 1858 of the Academy of Natural Sciences of Philadelphia. Among his writings were *Contributions to Geology, Fossil Footmarks in the Red Sandstones at Pottsville,* etc. He died in 1886.—His son, MATTHEW CAREY (1823-97), was an expert in chemistry, to which he devoted his life, making important discoveries. He was elected to the National Academy of Sciences in 1892.

Lead (lĕd), a city of Lawrence County, South Dakota, 3 miles s. w. of Deadwood; situated over the famous Homestake gold mine. Gold jewelry is manufactured. Pop. 8392.

Lead, a metal of a bluish-gray color. When recently cut it has a strong metallic luster, but soon tarnishes by exposure to the air owing to the formation of a coating of carbonate of lead. Its symbol is Pb, atomic weight 207, specific gravity about 11.36. It is soft, flexible and inelastic. It is both malleable

and ductile, possessing the former quality to a considerable extent, but in tenacity it is inferior to all ductile metals. It fuses at about 612°, and when slowly cooled forms octahedral crystals. It is an abundant and widely distributed metal. It is a constituent of a very large number of minerals, all of which could be used as sources of it if they could be obtained in sufficient quantity. In practice the metal is got from only a few of these minerals, especially from the sulphide, carbonate and one or two others. The most important of all the ores of lead is the *sulphide* or *lead glance*, which has been described under the term *Galena*. The *carbonate*, also called *cerusite*, or *lead-spar*, like all the salts of lead, is perfectly unmetallic in its appearance, and is not infrequently rejected from among common lead ore as an earthy mineral. It occurs in veins in primitive and secondary rocks, accompanying galena and other ores of lead. It is abundant in European countries, and at different localities in the United States. *The sulphate of lead*, *anglesite*, or *lead vitriol*, was found originally at Anglesey. *Chromate of lead*, *crocoisite*, or *crocoite* was originally found in Siberia; it has since been met with in the Philippine Islands, in Brazil and in Hungary. It was in this mineral that *chromium* was first discovered. *Phosphate of lead* is found accompanying the common ores of lead, though rarely in any considerable quantity. Finely crystallized varieties are found at Leadhills in Scotland, and in Cornwall. In the ores of lead silver is a very common constituent. There are four oxides of lead: (1) The suboxide (Pb_2O), of a grayish-blue color. (2) The protoxide or yellow oxide (PbO), called also *massicot*. *Litharge* is this oxide in the form of small spangles, from having undergone fusion. (3) The red oxide (Pb_3O_4), the well-known pigment called *red lead* or *minium*. (4) The dioxide or brown oxide (PbO_2), obtained by putting red lead in chlorine water or in dilute nitric acid. Of the salts formed by the action of acids on lead or on the protoxide, the carbonate, or white lead and the acetate, or sugar, of lead are the most important. The protoxide is also employed for glazing earthenware and porcelain. Carbonate of lead is the basis of white oil-paint and a number of other colors. The salts of lead are poisonous, but the carbonate is by far the most virulent poison. Lead is one of the most easily reducible metals, and from the native carbonate can be got by simply heating with coal or charcoal. The sulphide, however, which is the most abundant of its ores, is not so readily acted on by coal, and a reverberatory furnace, or a special variety of blast-furnace, is employed. Lead obtained in this way is usually too hard for use, and it has to be subjected to a process of purification. This is effected by roasting the lead, sometimes for several weeks, in a reverberatory furnace. By this process the antimony, which is the chief impurity, is burned off, and the dross, which consists of the oxide of that metal with oxide of lead, is afterwards reduced and utilized as a source of antimony. The lead, when judged sufficiently pure, is then cast into ingots or pigs of lead. Prepared in this way the lead retains all the silver present in the original ore, and as that is always of value it used to be extracted whenever the quantity of silver present amounted to above 10 oz. per ton. 1 part of tin and 2 of lead form an alloy fusible at 350° Fahr., which is used by tinmen under the name of *soft solder*. Lead also forms an imperfect alloy with copper. With antimony lead forms the important alloy called *type-metal*. Pewter is a hard alloy of four parts of tin and 1 of lead. In these proportions the lead is not attacked by organic acids, such as acetic. For the poisonous effects of lead see *Lead Poisoning*.

Lead, an instrument used on shipboard for discovering the depth of water. It is composed of a large piece of lead shaped like an elongated clock-weight, from 7 to 11 lbs. in weight, and is attached to a line, generally of 20 fathoms length, called the *lead-line*, which is marked at certain distances to denote the depth in fathoms. When the depth is great the *deep-sea lead*, weighing from 25 to 30 lbs., is used. The line, which is much longer than the former, and called the *deep-sea line*, is marked by knots every 10 fathoms, and by a smaller knot every 5.

Lead Plaster. See *Diachylon*.

Lead Poisoning, a disease caused by the presence of lead in some quantity in the system. It may be due to lead which has been taken up by water or other beverage from lead pipes or vessels in which it has been contained. The use of lead in the arts is also a frequent cause of painful, and sometimes of fatal effects, from the metal finding its way into the system. The glazing of culinary vessels with lead; the coloring of confectionery with the chromate, chloride, or carbonate of lead; the sweetening of sour wine by litharge or oxide of lead, may all produce more or less serious lead poisoning. But the

most frequent and virulent cases occur among painters and persons engaged in white-lead factories; and four forms of disease, either simple or complicated, are apt to manifest themselves—1. Lead or painters' colic, or dry belly-ache. 2. Lead rheumatism or arthralgia. 3. Lead palsy or paralysis, more particularly of the muscles of the forearm. 4. Disease of the brain, manifested by delirium, coma, or convulsions—a form, however, of rare occurrence. Opium and cathartics are the chief medicines administered.

Leadville (led'vil), a city, capital of Lake County, Colorado, 78 miles S. W. of Denver, situated on a plateau over 10,200 feet above sea-level. The city was founded in 1859, and owes its rapid growth to the rich argentiferous lead mines discovered in 1877. The production of the mines up to 1914 amounted to $400,000,000. Leadville has smelting furnaces, reduction works, and is an important trade center. Pop. 7508.

Leadwort (led'wurt), a name for the plants typical of the order Plumbaginaceæ.

Leaf (lēf), the green, deciduous part of a plant, usually shooting from the sides of the stem and branches, but sometimes from the root, by which the sap is supposed to be elaborated or fitted for the nourishment of the plant by being exposed to air and light on its extensive surface. When fully developed the leaf generally consists of two parts, an expanded part, called the *blade* or *limb*, and a stalk supporting that part, called the *petiole* or *leaf-stalk*. Frequently, however, the petiole is wanting, in which case the leaf is said to be *sessile*. Leaves are produced by an expansion of the bark at a node of the stem, and generally consist of vascular tissue in the veins or ribs, with cellular tissue or parenchyma filling up the interstices, and an epidermis over all. Some leaves, however, as those of the mosses, are entirely cellular. See *Botany*.

Leaf-Cutting Insects, a name given to certain species of solitary bees, from their lining their nests with fragments of leaves and petals of plants cut out by their mandibles. There are also leaf-cutting ants, which carry the fragments to their nests, where they form a soil for the growth of certain foliage of which these species of ants are fond.

Leaf-insects, the name given to orthopterous insects belonging to the family Phasmidæ, and popularly known also by the name of *walking-leaves*. Some of them have wing-covers so closely resembling the leaves of plants that they are easily mistaken for the vegetable productions around them. The eggs too have a curious resemblance to the seeds of plants. They are for the most part natives of the East Indies, Australia and South America. The males have long antennæ and wings, and can fly; the females have short antennæ, and are incapable of flight.

League (lēg), a measure of length varying in different countries. The English land league is 3 statute miles, and the nautical league 3 equatorial miles, or 3.457875 statute miles. The French metric league is reckoned as equal to 4 kilometers, or 4374 yards.

League, an alliance or confederacy between princes or states for their mutual aid or defense. What in French history is known distinctively as *The League* was headed by Henry, Duke of Guise, in 1576, against Henry III of France. Its ostensible object was the support of the Catholic religion, but the Duke of Guise used it as a political machine; it was dissolved in 1595. For certain other leagues see *League of Nations*, *Corn Laws*, *Covenant*.

League of Nations, also called SOCIETY OF NATIONS, a pact agreed to by the United States, the British Empire, France, Italy, Japan and the other nations associated with them in the European war (q. v.), 1914-18. It became an essential part of the treaty of peace with Germany (see *Treaty*), and the treaties with the other belligerents, and was signed first at Versailles, June 28, 1919. Its object was 'to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war; by the prescription of open, just and honorable relations between nations; by the firm establishment of the understandings of international law as the actual rule of conduct among governments; and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organized peoples with one another.' By article ten, the members of the League undertook 'to respect and preserve as against external aggression the territorial integrity and existing political independence of all members of the League.'

Leake (lēk), WILLIAM MARTIN, an English officer and author of works on the topography and antiquities of Greece, born in 1777; died in 1860. He entered the Turkish service, and was sent on several missions to Syria, Egypt and Greece. Among his principal works are *Researches in Greece*, etc. (1814); *Topography of Athens* (1821; *Travels*

in the Moreo (1830); *Travels in Northern Greece* (1835); *Numismatica Hellenica* (1854).

Leamington (lem'ing-tun), a municipal borough and watering-place of England, in Warwickshire, 2 miles east of Warwick, with which it is united in parliamentary representation. Its sheltered position and the beauty of its scenery, together with the excellence of its medicinal springs, have gained it much favor and the name of 'Leafy Leamington.' The springs, which include the three varieties of sulphurous, saline and chalybeate, attract numerous visitors. Pop. (1911) 26,717.

Leander. See *Hero.*

Leap-year (lēp-yēr), one of the years which contain 366 days, being every fourth year, which leaps over a day more than a common year. Thus in common years, if the first day of March is on Monday the present year, it will the next year fall on Tuesday, but in leap-year it will leap to Wednesday, for leap-year contains a day more than a common year, a day being added to the month of February. Every year is a leap-year which is divisible by 4 without remainder, except the concluding years of centuries, every fourth only of which is a leap-year; thus the years 1800 and 1900 were not leap-years, but 2000 and 2400 will be.

Lease (lēs), a permission to occupy lands or tenements for life or a certain number of years, or during the pleasure of the parties making the contract. The party letting the lands or tenements is called the *lessor*, the party to whom they are let the *lessee*, and the compensation or consideration for the lease the *rent*. A lease for a period not exceeding three years may be by verbal contract. If, however, the term be longer than three years, the lease must be by deed. A breach of any of the covenants contained in a lease was formerly sufficient to render it void, but now any breach may be compensated by a money payment. The power to lease necessarily depends upon the extent of the lessor's estate in the land or tenement to be leased. A proprietor who has only a life estate can of course lease his property only during his life. This is the case with a great part of the landed estates of Europe, the very object of entailments and other limitations being to secure the property against alienation, and against incumbrances to the prejudice of the heir or successor to the inheritance; and yet if the incumbent could not make a lease for a certain time it would be a great abridgment of the value of the estate to himself, as well as to his successor. The laws therefore provide that certain proprietors of estates for life may lease, on certain terms, for any time not exceeding a certain period, as twenty-one or forty years. The English common law makes a distinction as to the dignity of leasehold estates, which in many cases does not correspond to their comparative value and importance, the maxim being that a life-estate, being that of a freeholder, is greater or of more dignity than a lease for ever so many years, as a hundred or a thousand. A freehold is real estate; whereas a lease is but a chattel interest, though the term may be longer than the longest life.

Leather (leth'er), the skins of animals dressed and prepared for use by tanning, tawing, or other processes, which preserve them from putrefaction and render them pliable and tough. The skins employed are chiefly those of cattle, though the skins of horses, asses, sheep, pigs and goats are also converted into leather. Hides are received by the leather-maker in various states, those from a distance being usually cured by salting or sun-drying, sometimes by both processes. Before subjection to the process of tanning, the cured hides require to be brought back as far as possible to the condition of fresh hides by soaking and softening in water, to which sometimes salt or carbolic acid or sulphide of sodium is added. The softening is now generally assisted by machines, which subject the skins to a kneading process. They are then unhaired by the agency of lime, the customary method of liming being to spread out the hides flat in milk of lime in large pits, the hides being 'hauled' or drawn out once or twice a day, and the liquor stirred up; but there are several variations upon this method of liming. In America and on the European continent the hair is loosened by 'sweating,' which induces a partial putrefaction, attacking the root-sheaths without injuring the hide substance proper. In the old method of warm sweating, the hides were simply laid in a pile and covered, if necessary, with fermenting tan; the preferable cold method consists in hanging the hides in a moist chamber at a uniform temperature of 60° or 70° F. When the hair is sufficiently loosened the hides are usually thrown into the 'stocks,' where the slime and most of the hair is worked out of them. Other unhairing processes consist in treatment with alkaline sulphides, especially sulphide of sodium or sulphide of arsenic. To remove the loosened hair, the hide is generally thrown over a beam

and scraped with a blunt two-handled knife, but several unhairing machines have been invented. After unhairing, the loose flesh and fat are scraped, brushed, or pared from the inner side, and the hides intended for sole leather are rounded or separated into 'butts' and 'offal'—the latter the thinner parts, including the cheeks, shanks and belly pieces. The butts are then suspended for from twelve to twenty-four hours in soft fresh water, and frequently shaken in it to remove lime or dirt prior to undergoing the process of tanning (see *Tanning*) and currying (see *Currying*). The brilliant smooth surface of patent, enameled, lacquered, varnished, or japanned leather is due to the mode of finishing by stretching the tanned hides on wooden frames and applying successive coats of varnish, each coat being dried and rubbed smooth with pumice stone. Other special kinds of leather are seal leather, Russia and Morocco leathers (which see). Tawed leathers (see *Tawing*) consist chiefly of the skins of sheep, lambs, kids and goats treated with alum, or some of the simple aluminous salts, the principal tawing industries being the manufacture of calf kid for boots and glove kid. Shamoy, or oil-leather, is prepared by impregnating hides and skins with oil (see *Shamoy*).

Leather, ARTIFICIAL, the general name of certain fabrics possessing some of the qualities and often the appearance of leather. One of the earliest methods of fabrication consisted in applying oily pigments to cloth which was subsequently rolled and coated with a sort of enamel paint. An article of this sort, known under the name of leather-cloth, was first produced in the United States about 1849. Another kind consists of leather parings and shavings reduced to a pulp, and then molded into buckets, machinery-bands, picture-frames, and other useful and ornamental objects. A so-called vegetable leather consists of caoutchouc dissolved in naphtha, spread upon a backing of linen. It is of considerable strength and durability, and is used for table-covers, carriage-aprons, soldiers' belts, harness, book-binding, etc. Various other substitutes for leather have been recently introduced, one consisting of cloth with a thin facing of leather; but the commonest material is still obtained by varnishing textile fabrics with coatings of some resinous substance, and then painting or embossing them.

Leatherhead, an Australian bird, the *Tropidorhynchus corniculatus*, a species of honey-eater. So called from its head being devoid of feathers and presenting a leathery appearance. Called also *friar bird*.

Leather-wood (*Dirca palustris*), nat. order Thymelaceæ, a bush of the United States, with small, yellow flowers, flexible jointed branches, and a tough, leathery, fibrous bark, which is used by the Indians for thongs. The twigs are used for baskets, etc. Called also *moose-wood* and *wicopy*.

Leaven (lev'n), dough in which fermentation has commenced, employed to ferment and render light the fresh dough with which it is mingled. Its use dates from remotest antiquity; the addition of yeast or barm being of modern date.

Leavenworth (lev'en-worth), a city of Kansas, county seat of Leavenworth County, on the west bank of the Missouri, about 36 miles above Kansas City, in a rich agricultural region. There are sawmills, flourmills, brickworks, manufactories of carriages, wagons, furniture, shoes and various other industries; also coal mines in the vicinity. Apples are shipped from here in large quantities. There is a soldier's home, a military prison, and nearby is Fort Leavenworth, a school for the instruction of officers, and a State penitentiary. Pop. 19,363.

Lebanon (leb'a-non), a city, county seat of Lebanon County, Pennsylvania. It is in a rich coal and iron district. In addition to extensive iron and steel manufactures, it produces silk-machinery, carriages, organs, farming implements, etc. Pop. 19,240.

Lebanon, a city, county seat of Boone County, Indiana, 28 miles N. W. of Indianapolis. It has flour, saw and planing mills, etc. Pop. 5474.

Lebanon, a town in Grafton County, New Hampshire, on the Connecticut River. Has manufactures of woolens, clothing, etc. Pop. 5718.

Lebanon, MOUNTAINS OF, two nearly parallel mountain ranges in the north of Palestine, stretching from southwest to northeast, and enclosing between them a valley about 70 miles long by 15 miles wide, known anciently as Cœlē-Syria. The range on the west is called Lebanon, and that on the east Anti-Lebanon; the Arabs, however, call the former Jebel-Libnan, and the latter Jebel-esh-Shurky. Lebanon, which runs almost parallel to the Mediterranean coast, is the far loftier range of the two, and presents almost a continuous ridge, its loftiest summit—Jebel Sunnin, near Beyrout—being about 10,000 feet above the sea. Though under the snow limit, snow and ice remain throughout the year

in the higher ravines. Anti-Lebanon claims the culminating point of the whole chain, Jebel-esh-Sheikh (about 11,000 feet). In the south part of the chain the Upper Jordan has its source. The habitable districts are occupied towards the north by the Maronite Christians, and towards the south by the Druses. The forests of cedar for which Lebanon was famed have to a large extent disappeared.

Lebedin (lye-be-dyēn'), a town of Russia in the government of Kharkov, and 75 miles west northwest of the city of that name. Pop. 14,206.

Lebrija (le-brē'hä), a town of Spain, Andalusia, province of Seville, and 28 miles from the city of that name. Pop. 10,997.

Lecanora (le-ka-nō'ra), a genus of lichens, a species of which yields cudbear.

Lecce (let'chä), a town in Southern Italy, capital of the province of its own name, 50 miles E. S. E. of Taranto. It has noteworthy ancient buildings, and a large tobacco factory, textile manufactures, etc., and is noted for its olive oil. Pop. 35,179.

Lecco (lek'kō), a town of Northern Italy, on an arm of Lake Como, called from it Lago di Lecco. Pop. 10,352.

Lecky (lek'i), WILLIAM HARTPOLE, an English historical writer, born at Dublin in 1838. He wrote *The Leaders of Public Opinion in Ireland; History of the Rise and Influence of the Spirit of Rationalism in Europe; History of European Morals from Augustus to Charlemagne; History of England in the Eighteenth Century* (8 vols.). He died in 1903.

Le Conte, JOSEPH, scientist, born in Liberty County, Georgia, in 1823. He practiced medicine for several years at Macon, Georgia, but in 1850 went to Cambridge, Massachusetts, where he studied natural history under Agassiz. He subsequently held several professorships, and after 1869 occupied the chair of geology and natural history in the University of California. Died in 1901.

Leconte de Lisle (le cōnt' dē lēl), CHARLES MARIE (1818–94), French poet, born at St. Paul, Isle of Bourbon, 1818; died in 1894. After extensive travels he returned to Paris and assisted in the foundation of a paper, *Le Sifflet*. Leconte de Lisle's first poem, *Venus de Milo* (afterwards incorporated in his *Poèmes Antiques*), was published in 1848, and showed a keen interest in politics with a strong republican bent. His *Poèmes Antiques*, which appeared in 1852, contained some of his best work. In 1872 Leconte de Lisle was made librarian to the Senate.

Leda (lē'da), in Greek mythology, the wife of the Spartan king Tyndarus. By Zeus, in the form of a swan, she was mother of Castor and Pollux.

Lee, ARTHUR, American diplomatist and statesman, brother of R. H. Lee, born in Westmoreland County, Va., December 20, 1740; died December 12, 1792. He became American agent in England, 1770; was appointed commissioner to France, 1776; conducted negotiations with France, Spain, Prussia and Holland; member of Congress, 1782–85.

Lee, CHARLES, a general in the American Revolution, born at Dernhall, Cheshire, England, 1731; died at Philadelphia October 2, 1782. He was appointed major-general by the Continental Congress in 1775. He disobeyed orders at the battle of Monmouth, and was sentenced to one year's suspension from military service. He was afterwards dismissed altogether.

Lee, FITZHUGH, general, a grandson of Henry ('Light-Horse Harry') Lee, of Revolutionary fame, was born in Virginia in 1835. He was graduated at West Point in 1856, and at the outbreak of the Civil war became a general of cavalry in the Confederate army. In 1885 he was elected Governor of Virginia and reëlected for the succeeding term. In 1896 he was deputed by President Cleveland as Special Consul to Havana, where he remained until the rupture with Spain in 1898. He carried out his duties with much circumspection and received a great ovation on his return to America. He died in 1905.

Lee, FRANCIS LIGHTFOOT, signer of the Declaration of Independence, was born in Stratford, Virginia, in 1734; died in 1797. He was a member of the Continental Congress, 1775-1779, often presiding in committee of the whole; and was a framer of the articles of confederation.

Lee, HENRY, an American Revolutionary general, born in Westmoreland County, Virginia, in 1756; educated at Princeton College, and in 1776 appointed captain of a company of cavalry in Colonel Bland's Virginia regiment, and served in Washington's army until 1780, where he joined General Greene in the south. In the memorable retreat of Greene before Lord Cornwallis, Lee's legion acquired fame as the rear-guard of the American army, the post of the greatest danger. At the battles of Guildford Courthouse and Eutaw, and in other affairs, Lee specially distinguished himself. He was known in the army as 'Light Horse Harry.' On the conclusion of the

war he was sent to Congress as a delegate from Virginia, and in 1792 was chosen governor of that State. In 1799, on the death of Washington, he was selected to pronounce an eulogy on him, and characterised him as 'first in war, first in peace, and first in the hearts of his countrymen.' In 1801 he retired from public life. He died in 1818.

Lee, NATHANIEL, an English dramatic poet, born about 1657, and educated at Cambridge, whither he went in 1668. He afterwards went to London, and in 1675 produced his tragedy of *Nero*, from that time to 1681 producing a tragedy yearly, the best known being the *Rival Queens* (1677). He also tried his abilities as an actor, but failed in the attempt. In 1684 he became insane and was confined in Bedlam until 1688, when he was discharged and wrote two more tragedies, the *Princess of Cleves* and the *Massacre of Paris*, which appeared in 1689 and 1690. He died in 1691 or 1692.

Lee, RICHARD HENRY, a distinguished American of the Independence era, born Jan. 20, 1732, at Stratford, Westmoreland County, Virginia. He received a part of his education in England, and after his return to his native country was chosen a delegate to the House of Burgesses from Westmoreland County. In the opposition to unjust British claims he played throughout a most important part, and on being sent as delegate from Virginia to the first American Congress at Philadelphia (1774) was at once recognized as a leader in that assembly. He drew up most of those addresses to the king and the English people which were admitted by his political opponents to be unsurpassed by any of the state papers of the time. When war became inevitable Lee was placed on the various committees appointed to organize resistance. On the 7th of June, 1776, he introduced the motion finally breaking political connection with Britain. In consequence of weak health he was unable to serve in the field, but his activity as a politician was as unceasing as valuable. In 1784 he was unanimously elected president of the Congress, and when the federal constitution was established he entered the Senate for his native State. In 1792 he retired into private life, and died in Virginia in 1794.

Lee, ROBERT EDWARD, general, commander-in-chief of the Confederate army, one of the most skilful tacticians who took part in the great Civil war, was born in Virginia in 1807, the son of General Harry Lee, of Revolutionary fame. In 1829 he left the military academy of West Point with the rank of second lieutenant of engineers. After making a tour in Europe he obtained a captaincy in 1838, and in 1847 was appointed engineer-in-chief of the army for the Mexican campaign, in which his brilliant services at Cerro-Gordo, Contreras, Cherubusco and Chapultepec (at the latter he was wounded) speedily gained for him the

General Lee.

rank of colonel. From 1852 to 1855 he was superintendent of military studies at West Point. In 1861 he became colonel of his regiment, but on the secession of Virginia from the Union he threw up his commission, in 1862 was given the command of the Virginia army, and subsequently was selected by President Davis as commander-in-chief. In June, 1862, he defeated the Federal army under McClellan, and aided by Stonewall Jackson, defeated Pope at Manassas Junction on the 30th. Lee now crossed the Potomac into Maryland and fought an indecisive battle with McClellan at Antietam, subsequently crossing the Potomac and withdrawing behind the Rappahannock. On the 13th of December he defeated the Federalists under Burnside at Fredericksburg, and on the 2d and 3d May, 1863, defeated Hooker at Chancellorsville. This victory was followed by an invasion of Pennsylvania, where he was beaten by Meade at Gettysburg, July 1st and 3d, and forced to retreat into Virginia. The campaign of 1864 was begun by the advance of General Grant on May 4. A succession of stubbornly contested battles followed from the Wilderness by way of Spottsylvania and Cold Harbor to Petersburg. The siege of Petersburg was protracted until April 2, 1865, when Grant broke through Lee's defenses, and forced him to abandon Richmond. The Union forces with their great superiority of men gradually

hemmed in the Confederate forces, and on April 9, Lee and his army surrendered to Grant at Appomattox Court House. General Lee retired into private life; was elected president of Washington College, Lexington, Va., in 1865. He died October 12, 1870.

Leech (lēch), a name for those Annelida or Worms that form the type of the order Hirudinea (synonyms, *Suctoria*, *Discophora*) of that class. The distinctive feature of the leeches consists in the presence of one or two sucking discs. The rings or segments of the body are very numerous and closely set. Usually leeches breathe either by the general surface of the body or by little sac-like pouches known as the respiratory *sacculi*. They chiefly inhabit fresh-water ponds, though some live among moist grass, and some are marine. The familiar horse leeches (*Hæmopsis sanguisūga*) of fresh-water ponds and ditches are included in this group. The land leeches of Ceylon are terrestrial in habits, living among damp foliage and in like situations. They fasten on man and beast, and are a serious pest to travelers. The species generally employed for medical purposes belong to the genus *Sanguisūga*, and are usually either *S. officinālis* (the Hungarian or green leech), used in the south of Europe, or *S. medicinālis* (the brown-speckled or English leech), used in the north of Europe. The latter variety, however, is now rare in England, owing to the drainage of bogs and ponds. The mouth, situated in the middle of the anterior sucker, is provided with three small white teeth, serrated along the edges, and capable of inflicting a peculiar Y-shaped wound, which, like that produced by the soldier's bayonet, is difficult to close, and permits a large and continuous flow of blood. From 4 drachms to 1 oz. may be stated to be the average quantity of blood that can be drawn by a leech. After detaching themselves, leeches are made to disgorge the blood they have drawn by being placed in a weak solution of salt, or by having a little salt sprinkled over them. Leeches appear to hibernate in winter, burying themselves in the mud at the bottom of the pools, and coming forth in the spring.

Leech, the border or edge of a sail which is sloping or perpendicular.

Leech, JOHN, an English artist and humorist, born in London in 1817; educated at the Charterhouse School. He studied at St. Bartholomew's Hospital for a time, but forsook medicine, and commenced drawing on wood for publications. His first important work was illustrations to the *Ingoldsby Legends*. In 1841 he joined the staff of *Punch*, his first drawing appearing in August of that year. For that periodical he worked with preëminent success, supplying weekly political satires and pictures of all phases of English life, showing no less artistic power than versatile humor. He died suddenly in 1864. His designs for *Punch* have nearly all been republished as *Pictures of Life and Character*, and as *Pencillings from Punch*. He also executed the illustrations for *Mr. Sponge's Sporting Tour*, *The Comic History of England*, and other books. No artist has excelled John Leech in his particular line of artistic production.

Leechee. See *Litchi*.

Leeds (lēds), a borough and manufacturing city of England, in the West Riding of Yorkshire, on the river Aire, which here becomes navigable, and is crossed by eight bridges; 185 miles by railway N. N. W. from London. Among the most conspicuous of the public buildings are the town hall, considered one of the finest municipal buildings in the kingdom; the infirmary, a building in the Gothic style; the municipal offices and free library and the royal exchange. The University of Leeds has handsome buildings and about 1200 students. In the vicinity is Kirkstall Abbey, a noble ruin which belongs to the borough, and in the environs is a beautiful park of 300 acres. Leeds has been for generations the chief seat of the woolen manufacture of Yorkshire. In the wholesale clothing trade several thousand hands are employed, as also in steel works, iron foundries, rolling-mills, tool and machine factories. The boot and shoe factories, the leather trade, and the cloth-cap trade also employ large numbers of men and women, and there are extensive color-printing works, tobacco manufactories, chemical and glass works, works for making drainage pipes, fire-bricks, terra cotta, pottery, etc. Nearly a hundred collieries are worked in the district. The history of Leeds extends over more than 1200 years, the town being mentioned under the name of *Loid* or *Loidis* by the Venerable Bede as the capital of a small British kingdom about 616. Leeds was not made a parliamentary borough till 1832, when it was allotted two members; in 1867 it got a third, and in 1885 two more. In the neighborhood is the fine ruin of Kirkstall Abbey. Pop. (1911) 445,568.

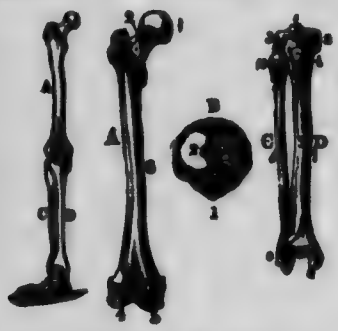
Leek (lēk; *Allium Porrum*), a mild kind of onion much cultivated for culinary purposes. The stem is rather tall, and the flowers are disposed in large

compact balls, supported on purple peduncles. See also *Allium*.

Leek, a market town of Staffordshire, England, picturesquely situated in the valley of the Churnet, 28 miles from Manchester. The staple industry is the manufacture of sewing silks and silk trimmings, silk dyeing, etc. Pop. 16,665.

Leeuwarden (lā'ụ-vär-den), a town of Holland, capital of the province of Friesland, on the Ee, 70 miles northeast of Amsterdam, intersected by numerous canals. The principal edifices are the palace of the former stadtholders of Friesland, several churches, town house and provincial courthouse. The industrial establishments are various. Pop. 32,203.

Leeuwenhoeck (lā'ụ-ven-hōk), ANTONY VAN, a Dutch microscopist, born in 1632; died in 1723. He completed Harvey's discovery of the circulation of the blood by showing that it passes from the arteries to the veins through the capillaries. He also discovered the red corpuscles of the blood, the spermatozoa, the infusorial animalcules,



BONES OF THE HUMAN LEG.

A, Femur: 1, Head; 2, Neck; 3, Shaft; 4, External condyle; 5, Internal do. B, Patella: 1, Apex of the bone. 2, Surface of articulation, with external condyle of the femur; 3, Do. with internal condyle. C, Fibula: 6, Shaft; 9, Lower extremity, the external malleolus; 10, Upper extremity. D, Tibia: 1, Spinous process; 2, Inner tuberosity; 3, Outer do.; 4, Tubercle; 5, Shaft; 7, Internal surface of shaft; the sharp border between 5 and 7 the crest of tibia; 8, Internal malleolus.

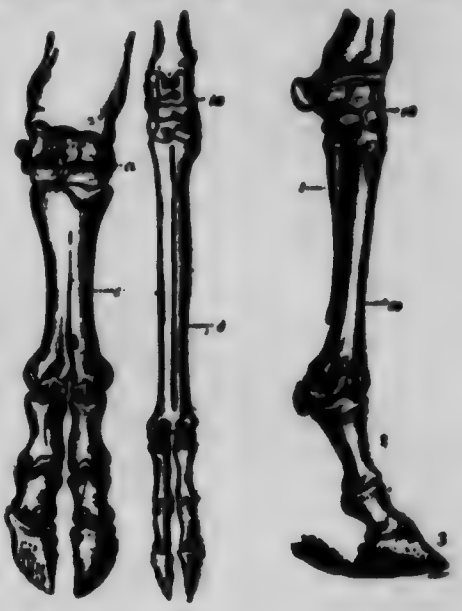
etc. He contributed papers to the *Philosophical Transactions* of the Royal Society, London.

Leeward (lē'wärd, lō'ärd), in nautical phraseology, a term that refers to the quarter towards which the wind blows. See *Lee*.

Leeward Islands. See *West Indies*.

Lefkosia. See *Nicosia*.

Leg, any limb of an animal that is used in supporting the body, and in walking and running; in a narrower sense, that part of the human limb from the knee to the foot. The human leg has two bones, the inner called the *tibia* or shin-bone, the outer called the *fibula* or clasp-bone. The tibia is much the larger



A B C

A, Foreleg of Ox (*Bos taurus*). B, Hind-leg of stag (*Cervus elaphus*). *ca*, Carpus; *ts*, Tarsus; *c*, 'Canon-bone,' composed of the united metacarpals or metatarsals of the third and fourth digits. C, Foreleg of horse. *ca*, Carpus; *m*, Metacarpal of the third digit; *s*, 'Splint-bone,' or rudimentary metacarpal; 1, First phalanx or 'great pastern'; 2, Second phalanx or 'small pastern'; 3, Third phalanx or 'coffin-bone.'

of the two, and above is connected with the thigh-bone to form the knee-joint, the fibula being attached to the outer side of its head. In front of the knee-joint, situated within a tendon, is the knee-cap or *patella*. (See *Knee*.) The lower end of the tibia and of the fibula enter into the ankle-joint, the weight being conducted to the foot by the tibia. (See *Foot*.) In the foreleg are muscles which extend the foot, and on the back of the leg are two large muscles which form the bulk of the calf of the leg, and which unite in a thick tendon, the *tendo Achillis*. These muscles are used in walking, jumping, etc.

Legacy (leg'a-si), a gift by will of personal property, as goods and chattels; a testamentary gift of real property being called a *devise*. The mode of compelling executors to pay a legacy

is by suit in equity for the administration of the testator's assets; courts of common law have not, in general, any jurisdiction. Executors cannot be compelled to pay a legacy until the expiration of a year after the testator's death; and even after that legatees must refund money if necessary for the payment of creditors.

Le Gallienne (lē-gal-i-en), RICHARD, author, born at Liverpool, England, in 1866. Since 1898 he has resided in New York. His books include *The Book-Bills of Narcissus*, *The Religion of a Literary Man*, *Retrospective Reviews*, *Rudyard Kipling*, *Prose Fancies*, several volumes of poetry, etc.

Legal Tender, money which a creditor is bound to accept in payment. See *Money*.

Legates (leg'āts), persons sent by the pope as ambassadors to foreign courts. Legates *a latere*, highest in rank, were sent on particularly important missions, and were always cardinals.

Legation (le-gā'shun), the body of official persons attached to an embassy. Formerly in Italy legation signified a division of the States of the Church.

Legend (lej'end), ordinarily the title of a book containing the lessons that were to be read daily in the service of the early church. The term legend was afterwards applied to collections of biographies of saints and martyrs, or of remarkable stories relating to them, because they were read at matins and in the refectories of cloisters, and were earnestly recommended to the perusal of the laity. The Roman breviaries contain histories of the lives of saints and martyrs, which were read on the days of the saints whom they commemorated. They originated in the twelfth or thirteenth century, and they contributed much to the extinction of the old German (heathen) heroic traditions. Among the best-known collections were the *Legenda Sanctorum* or *Historia Lombardica* and the *Golden Legend* (q. v.). The term is used in a general sense for any remarkable story handed down from early times, and is also applied to the motto or words engraved in a circular manner round the head or other figure upon a medal or coin and to descriptive texts beneath illustrations in books, etc.

Legendre (lē-zhäṅ-dr), ADRIEN MARIE, mathematician, born at Paris in 1752, early a professor of mathematics in the military school there, and in 1783 a member of the Academy. In 1787 he was employed along with Cassini and Mechain to measure a degree of latitude between Dunkirk and Boulogne, while English mathematicians did the same on the other side of the Channel. He died in 1833. He particularly distinguished himself by profound investigations as to the attraction of elliptical spheroids, and his method of calculating the course of the comets. His best-known work is his excellent *Éléments de Géometrie* (1794), translated into English by Thomas Carlyle, and edited by Sir David Brewster.

Legerdemain (lej-er-de-mān'), or CONJURING, a popular amusement or exhibition, consisting of tricks performed with such art and adroitness that the manner or art eludes observation. All the phenomena of legerdemain are referable to sleight of hand, mechanical contrivances, confederacy, or some combination of these. In the more elaborate phases of the art the aid of optical, chemical, and other sciences is utilized.

Leghorn (leg'hōrn; Italian, *Livorno*), a seaport of Northern Italy, in the province of Leghorn or Livorno, on the Mediterranean, 12 miles S. S. W. of Pisa and 50 miles W. S. W. of Florence. Leghorn is for the most part modern, and well and regularly built. It is intersected by canals, and a navigable canal connects it with the river Arno. Among objects of interest are the duomo or cathedral; the Church of the Madonna; a synagogue richly ornamented with marbles; the English chapel and cemetery (containing Smollett's tomb); the lazarettos, particularly San Leopoldo, one of the most magnificent works of the kind in Europe; etc. The manufactures are varied. Shipbuilding is carried on, and within recent years several ironclads have been constructed in the dockyards. Trade is principally carried on with the ports of the Levant and the Black Sea, and with the United Kingdom. Leghorn was a mere fishing village when it came into the possession of the Florentines in 1421, and it continued to be a place of no importance till the sixteenth century. It now ranks among the chief ports after Genoa and Naples. Pop. (1911) 105,315.

Leghorn, a kind of plait for bonnets and hats made from the straw of bearded wheat cut green and bleached; so named from being imported from Leghorn.

Legio Fulminatrix. See *Aurelius Antoninus*.

Legion (lē'jun), in ancient Roman armies a body of infantry consisting of different numbers of men at different periods, from 3000 to above 6000, often with a complement of cavalry.

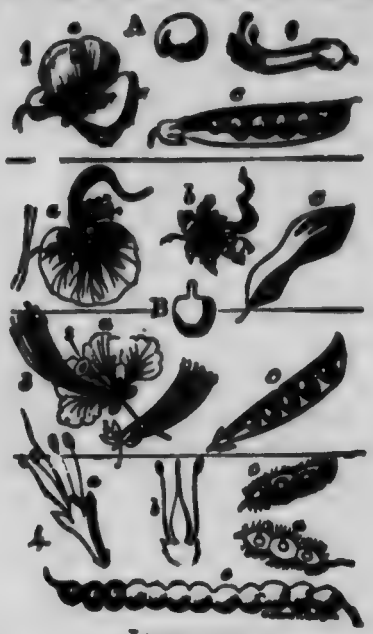
Legion, AMERICAN, an organization of American veterans of the European war, formed in Paris, March, 1918, formally recognized in St. Louis, May, 1919. Lieut.-Col. Franklin D'Olier, of Philadelphia, was elected the first national commander.

Legion of Honor (*Légion d'Honneur*), a French order for the recognition of military and civil merit, instituted by Napoleon while consul, May 19, 1802, and inaugurated July 14, 1804. The decoration originally consisted of a star containing the portrait of Napoleon surrounded by a wreath of oak and laurel, with the legend, 'Napoléon empereur des Français': on the reverse was the French eagle with a thunderbolt in his talons, and the legend, 'Honneur et patrie.' The order has been remodeled several times, the last occasion being subsequent to the downfall of the second empire. There are now five ranks or classes: ordinary chevaliers or knights, officers, commanders, grand-officers, grand-crosses. The profuse granting of the decoration of the order latterly brought the institution into discredit, and the number of chevaliers is now restricted to 25,000, the officers to 4000, the commanders to 1000, the grand-officers to 200 and the grand-crosses to 70. The star now bears a figure emblematic of the republic, with the inscription 'République Française, 1870,' on the reverse two flags, with the inscription 'Honneur et Patrie.'

Legros (lā-grō), ALPHONSE, a French artist whose work has been for the most part done in England; born near Dijon in 1837, and largely self-instructed. He went to Paris in 1851, and in 1857 exhibited for the first time in the Salon. He subsequently settled in London and in 1876 became professor at the Slade School in University College. His more important pictures are the *Anglers*, the *Pilgrimage*, the *Spanish Cloister*, the *Benediction of the Sea*, the *Baptism* and the *Coppersmith*. His etchings are of higher value, among the most noteworthy being his *Death and the Woodman* and *Le Repas des Pauvres*, both marked by a fine breadth in conception and handling.

Legumin (le-gū'min), a material which makes up the greater part of the substance of leguminous seeds, such as peas and beans, very similar to casein.

Leguminosæ (le-gū-mi-nō'sē), one of the largest and most important natural orders of plants, including about seven thousand species, which are dispersed throughout the world. They are trees, shrubs, or herbs, differing widely in habit, with stipulate, alternate (rarely opposite), pinnate, digitately compound or simple leaves, and axillary or terminal one or many flowered peduncles of often showy flowers, which are



LEGUMINOSÆ.

1, Papilionaceæ: *a*, Flower of the pea; *s*, Standard; *w*, Wings; *k*, Keel; *b*, Stamina, nine connected, one free; *c*, Legume, seeds fixed to the upper suture in one row. 2, Swartsieæ: *a*, Flower of *Swartsia grandiflora*, with its single petal and hypogynous stamens; *b*, Calyx; *c*, Legume. 3, Cæsalpinieæ: *a*, Flower of *Poinciana pulcherrima*, showing its difform interior upper petal; *b*, Calyx; *c*, Legume. 4, Mimoseæ: *a*, One flower of common sensitive plant (*Mimosa pudica*), showing its regular corolla; *b*, Stamina, hypogynous; *c*, Legume exterior; *d*, Legume interior; *e*, Legume of *Acacia arabica*. A, Curved radicle, as in Papilionaceæ. B, Straight radicle, as in Swartsieæ and Cæsalpinieæ.

succeeded by a leguminous fruit. Four suborders are recognized: Papilionaceæ, Swartsieæ, Cæsalpinieæ and Mimoseæ. It contains a great variety of useful and beautiful species, as peas, beans, lentils, clover, lucern, sainfoin, vetches, indigo, logwood, and many other dyeing plants, acacias, senna, tamarinds, etc.

Leh (lā), or LE, the chief town of Ladakh province, in Cashmere, in a fine open valley about 11,000 feet above sea-level, and 2 miles from the right bank of the Indus, 2100 miles north of Simla. The rajah's palace and several temples here are of very rich architecture. Leh is the great entrepôt for the traffic be-

tween the Punjab and Chinese Tartary, a principal article of trade being shawl wool from the latter. Population variously estimated from 4000 to 12,000.

Lehigh River (lē'hī), a river of Pennsylvania, rising in Pike County and joining the Delaware at Easton, after a course of 100 miles, of which 70 are navigable. It is noted for beautiful, picturesque, wild scenery.

Lehighton, a borough in Carbon County, Pennsylvania, on the w. bank of the Lehigh, 4 miles s. of Mauch Chunk. It is in a coal-mining district, and has railroad shops, silk factories, an automatic press company, etc. Pop. 5316.

Lehigh University, an institution of learning, at South Bethlehem, Pennsylvania, founded and liberally endowed by Asa Packer for the instruction (without charge) of young men from any part of the country or of the world. It has fine buildings, a library of over 60,000 vols., etc. It gives instruction in the various branches of general literature and technology, and is especially noted for the latter.

Leibnitz (lib'nits), GOTTFRIED WILHELM, BARON VON, a German scholar and philosopher, born in 1646 at Leipzig. He studied law, mathematics and philosophy at the university of his native town, where he published a philosophical dissertation, *De Principio Individui*, as early as 1663. This was followed by several legal treatises, for example, *De Conditionibus* (1665), and by a remarkable philosophico-mathematical treatise, *De Arte Combinatoria* (1666). After holding political appointments under the Elector of Mainz he went to Paris in 1672, and there applied himself particularly to mathematics. He also went to England, where he was elected a member of the Royal Society, and made the acquaintance of Boyle and Newton. About this time he made his discovery of the differential calculus. The Duke of Brunswick-Lüneburg then gave him the office of councilor and a pension, and after a further stay in Paris he returned to Hanover in 1676, and entered upon the superintendence of the library. For the rest of his life he served the Brunswick family, chiefly residing at Hanover, though visiting also Berlin, Vienna, etc. Being commissioned to write the history of the ducal house of Brunswick-Lüneburg, Leibnitz went in 1687 to Vienna, and thence to Italy. The three years spent in these tours of investigation supplied him with an immense mass of political materials, portion of which appeared in several works. About this time he proposed a scheme to reunite Protestants and Catholics. Having assisted the Elector of Brandenburg (afterwards Frederick I of Prussia) to establish the Royal Academy of Sciences at Berlin, he was made president for life (1700). He was also made a privy-councilor by Emperor Peter the Great. In 1710 he published his celebrated *Essai de Théodicée*, on the goodness of God, human liberty and the origin of evil, in which he maintained the doctrines of prestablished harmony and optimism, and which was followed by his *Nouveaux Essais sur l'Entendement Humain*. A sketch of his philosophy was given by him in his *Monadologie*, 1714. His controversy with Newton concerning the discovery of the differential calculus, with the pains of the gout, embittered the close of his active life. He died in 1716. The principal metaphysical speculations of Leibnitz are contained in his *Théodicée*, *Nouveaux Essais*, *Système nouveau de la Nature*, *De Ipsa Natura*, *Monadologie*, and in portions of his correspondence. He controverted Locke's rejection of innate ideas, holding that there are necessary truths which cannot be learned from experience, but are innate in the soul, not, indeed, actually forming objects of knowledge, but capable of being called forth by circumstances. Authorities seem generally agreed that Leibnitz discovered the differential calculus independently of any knowledge of Newton's method of fluxions, so that each of these great men in reality attained the same result for himself.

Leicester (les'tèr), a municipal and parliamentary borough of England, county town and near the center of Leicestershire, on the right bank of the Soar. The more important public buildings are the Church of All Saints; St. Margaret's, a large and beautiful structure of the fifteenth century on the site of the old Saxon cathedral, and adjoining the abbey at which Cardinal Wolsey died in 1530; St. Martin's; St. Mary's, dating from twelfth century; St. Nicholas', a very ancient Gothic church; the municipal buildings, with lofty clock-tower, and fine public square with fountain; the guild hall, the public library, etc. The staple manufactures are cotton and worsted hosiery, elastic webs, ironware, boots and shoes, shawls, lace, thread, etc. Leicester is a place of considerable antiquity, and was known to the Romans under the name of Ratæ. Its walls and strong castle were demolished in the reign of Henry II. It suffered severely during the wars of Lancaster and York, and also during the Parlia-

mentary war, having in the latter been first taken by storm by the royalists, and then retaken by the republicans. Pop. 227,242.—LEICESTERSHIRE is bounded by Nottingham, Derby, Warwick, Northampton, Rutland and Lincoln; area, 813 sq. miles, almost all arable land, meadow and pasture. The surface is varied and uneven, but possesses no bold features. The county is nearly equally divided geologically by the lias and sandstone formations; the former on the east, the latter on the west side. The coal formation exists to the extent of about 15 square miles on the west, and the clay-slate in Charnwood Forest. Dairy farms are numerous, and the cheese known as Stilton is chiefly made in Leicestershire. The Leicestershire sheep are much valued for their wool. Principal towns besides Leicester—Loughborough, Market-Harborough, Melton-Mowbray and Hinckley. Pop. (1911) 476,603.

Leicester, ROBERT DUDLEY, EARL OF, fifth son of John Dudley, Duke of Northumberland, born in 1532; died in 1588. In 1549 he was married to Amy Robsart, daughter of a Devonshire gentleman, and is said to have been accessory to her murder in 1560. Elizabeth created him Earl of Leicester and privy-councilor, and bestowed titles and estates on him lavishly. Her fondness for him caused his marriage with her to be regarded as certain. His marriage with the Countess of Essex in 1578 mortally offended her. He successfully commanded in the Low Countries, and when England was threatened by the Spanish Armada, in 1588, was appointed lieutenant-general.

Leidy (lī'de), JOSEPH, an eminent naturalist, was born in Philadelphia in 1823. In 1845 became prosector to the chair of anatomy in University of Pennsylvania, in 1853 professor, and in 1884, director of the department of biology. He was elected president of the Academy of Natural Sciences in the same year. An ardent zoologist and palæontologist, his published papers on biological subjects number over 800. Many of these had to do with microscopic forms, which he studied diligently, describing his researches in the *Fresh Water Rhizopods of North America*. Another work of value was *The Extinct Mammalian Fauna of Dakota and Nebraska*. He died in 1891.

Leigh (lē), a town of England, county of Lancaster, 7½ miles from Bolton. There are coal mines in its vicinity, and it has glassworks, textile factories, etc. Pop. (1911) 44,109.

Leighton (lā'ton), SIR FREDERICK, painter, president of the Royal Academy, born at Scarborough in 1830. At fourteen he entered the Academy of Berlin, but a year later went to Frankfort-on-Main to continue his general education. His subsequent art studies were made at Florence (1845-46),

Sir Frederick Leighton, P. R. A.

the academy at Frankfort-on-Main (1846-48), Brussels (1848-49), Paris (1850), and Frankfort again (1851-53). From Rome, where he spent some three winters, he sent to the academy of 1855 his picture of *Cimabue's Madonna carried in procession through the streets of Florence*, which called forth general admiration, and was purchased by the queen. For four subsequent years he resided at Paris, availing himself of the friendly counsel of Ary Scheffer, Robert Fleury, and other painters, and then finally took up residence in London. In 1864 he was elected an associate of the Royal Academy, and in 1869 an academician. In 1878 he succeeded Sir Francis Grant as president of the Academy, was knighted, and was named an officer of the Legion of Honor. Seven years later he was made a baronet, and he received various honors and honorary degrees. From the long list of his works special mention may be made of his *Hercules Wrestling with Death* (1871), the *Daphnephoria* (1876), the *Music Lesson* (1877), *Sister's Kiss* (1880), *Phryne* (1882), *Cymon and Iphigenia* (1884), *Captive Andromache* (1888), and *Ball Players* (1889); and the large frescoes at the South Kensington Museum, representing the Industrial Arts applied to War, and the Arts of Peace. In addition to his pictures he achieved a high place as a sculptor by his *Athlete Strangling a Python* (1876),

and his *Sluggard* (1886). The special merit of his work lies in the perfection of his draftsmanship and design, his coloring, though possessing unfailing charm of harmonious arrangement, being only thoroughly satisfactory from the decorative point of view. He had fine poetic quality, conjoined with elegance in drawing and great refinement in execution. He died in 1896.

Leighton, Robert, a Scotch prelate, born in Edinburgh or London in 1611. He was educated at Edinburgh University, and then spent about ten years on the continent, chiefly at Douay. On his return to Scotland in 1641 he became pastor of the parish church of Newbattle, but resigned his living in 1652, and in the following year was chosen principal of Edinburgh University. On the attempt at the accession of Charles II to establish Episcopacy in Scotland, Leighton accepted reluctantly the bishopric of Dunblane, in the hope of moderating the violent dissensions of the time. He twice visited London (1665 and 1669) to implore the king to moderate the zeal of Sharpe and Lauderdale, and accepted the archbishopric of Glasgow in 1670 only after a promise of court assistance in the attempt to carry out a liberal measure for the comprehension of the Presbyterians. The promise being broken, he resigned his see, and subsequently resided for the most part at Broadhurst, his sister's estate in Sussex. He died in London in 1684. He was celebrated for his learning, gentleness and disinterestedness. He founded exhibitions in the colleges of Edinburgh and Glasgow.

Leighton-Buzzard, a town of England, Bedfordshire, 18 miles southwest of Bedford, on the Ouse, and near the Grand Junction Canal. It carries on lacemaking and straw-plaiting. Pop. (1911) 6784.

Leiningen (lin'ing-en), a former principality of Germany, erected in 1779, and divided between Baden, Bavaria and Hesse at the Peace of Lunéville in 1801.

Leinster (lin'stèr), a province of Ireland, divided into twelve counties—Wexford, Kilkenny, Carlow, Wicklow, Dublin, Kildare, Queen's County, King's County, Westmeath, Longford, Meath and Louth; area, 7620 sq. miles. Leinster which is in the southeastern part is the most favored of the four provinces of Ireland in the extent of its tillage and pasture lands and its wealth in minerals. Pop. 1,150,480.

Leipa, or Leippa (Böhmisch), (bœ'mish-li'pä), a town of Bohemia, in the circle of Leitmeritz, 43 miles N. N. E. of Prague. Pop. 10,674.

Leipoa (li-pō'a), a genus of gallinaceous birds of the family Megapodidæ, of which the only species is the *Leipoa ocellāta* of the naturalists, the *ngow-oo* of the aboriginal Australian, and the 'native pheasant' of the colonists. The bird is a native of Australia, is of the size of a very small turkey, and, like the Australian jungle-fowl, constructs mounds in which to lay its eggs.

Leipzig (lip'zih), or Leipsic, a historic university city of Saxony, and one of the chief seats of commerce in Germany, 64 miles W. N. W. from Dresden. It lies in an extensive and fertile plain on the Elster, here joined by the Pleisse and Parthe, and consists of an old central or inner town and more modern and much more extensive suburbs. The marketplace in the old town has a picturesque appearance, having about it the town hall (Rathhaus), built in 1556, and other buildings in the renaissance style. It contains a fine war monument erected in 1888. The Augustus-Platz is one of the finest squares in Germany, overlooked by the university, museum, new theater, etc. The Pleissenburg or castle, now partly used as a barrack, withstood the attacks of Tilly, and is memorable as the scene of the famous Leipzig disputation between Luther and Dr. Eck in 1519. The suburbs contain the post-office buildings, the Church of St. John, the fine new Church of St. Peter and the Roman Catholic church; the Rosenthal (Valley of Roses), with pleasant wooded walks; and numerous places of recreation. The university, founded in 1409, is the second in importance in Germany (that of Berlin being first), and has over 3000 students, and a library of 350,000 vols. Schools are numerous and good, the conservatory of music being of some celebrity. Besides being the center of the book and publishing trade of Germany, Leipzig possesses considerable manufactures, and has important general commerce carried on especially through its three noted fairs at the New Year, Easter and Michaelmas. Leipzig is of Wendish origin, and dates from the eleventh century. It early received the Reformation. In 1631 Gustavus Adolphus defeated Tilly near it at Breitenfeld. It suffered much from the Seven Years' war. On October 16-19, 1813, the great 'battle of the nations' (Völkerschlacht) was fought around and in Leipzig, in which Napoleon received his first defeat. Pop. 585,743.

Leisnig (lis'nih), a town of Saxony, in the circle of Leipzig and

28 miles from that city, on the left bank of the Mulde. Pop. 8147.

Leistenwein. See *Franconian Wines.*

Leitch (lēch), WILLIAM LEIGHTON, landscape painter, born at Glasgow in 1804; died in London in 1883. Commencing his career as a house painter in his native city, he removed to London early in life and practised scene painting successfully. After five years of study in Italy he settled in London, and gained celebrity as an art teacher. Among his pupils were Queen Victoria and all the members of the royal family. At the request of a deputation of influential artists he became a member of the New Society of Painters in Water-colors in 1861, and from that time was a regular contributor to the society's exhibitions, and to those of its successor, the Royal Institute of Water-color Painters. Many of his subjects are Italian and Sicilian scenery, but scenes in Scotland and elsewhere are not of infrequent occurrence. His productions (the majority of which are done in water-colors) are not numerous, but of great merit. They are distinguished by graceful composition, perfect balance of the several parts, and much power in rendering atmospheric effects. A number of them have been engraved as book illustrations and also as separate prints.

Leith (lēth), a seaport in the county of Midlothian, Scotland, about 1½ miles from the center of Edinburgh, on the south shore of the Firth of Forth, on both sides of the Water of Leith. It is connected with Edinburgh (of which it is the port) by Leith Walk and other lines of streets, and by branch lines of the railways centering in Edinburgh. Among the principal public buildings are the custom house, exchange buildings, courthouse, Trinity House, corn-exchange, etc. The chief manufactures are ropes, sail-cloth, soap, candles, paints, colors, artificial manures, and there are breweries, distilleries, shipbuilding yards, sugar refineries, iron foundries, engine-works, etc. The foreign trade is chiefly with the continent, particularly with the ports on the Baltic, and the principal French and German ports; there is also some colonial and an important coasting trade. There are extensive wet docks, and three public graving docks, capable of receiving the largest vessels. Leith is mentioned for the first time, under the name of Inverleith, in a charter of David I granted in 1128; and in 1329 a charter of Robert I made a grant of the port and mills of Leith to the city of Edinburgh. It did not obtain a separate and independent magistracy till 1832. Pop. (1911) 80,488.

Leitha, or LEYTHA (lī'tä), a river rising in Lower Austria and forming for some distance the boundary between the two divisions of the Austro-Hungarian Empire (the Cisleithan or Austrian and the Transleithan or Hungarian); afterwards passing into Hungary and joining the Danube at Altenburg.

Leitmeritz (lit'me-rits), a town of Bohemia, beautifully situated on a height above the right bank of the Elbe, 34 miles northwest of Prague. It is the see of a bishop, and contains a fine old cathedral. Pop. 13,075.

Leitrim (lē'trim), a county of Ireland, in Connaught, touching Donegal Bay on the north. Area, 613 sq. miles. A considerable portion of its western boundary is formed by the Shannon, which first flows through Lough Allen, a lake situated near the center of the county, and almost cutting it in two. The surface in the north is somewhat rugged and mountainous, but elsewhere generally flat and in part moorish. In the valleys the soil, resting generally on limestone, is fertile. The principal crops are oats and potatoes. The minerals include iron, lead and copper, all at one time worked, and coal, still raised to some extent. County town, Carrick-on-Shannon. Pop. 69,343.

Leland (lē'land), CHARLES GODFREY, author, born at Philadelphia in 1824; studied law, but abandoned it for a literary life. He is best known through his quaint *Hans Breitmann Ballads* in Pennsylvania Dutch dialect, and his works on the language and poetry of the Gypsies. He died in 1903.

Leland, or LAYLONDE, JOHN, an English antiquary, born in London about 1500, educated at St. Paul's School, and Christ's College, Cambridge, afterwards studying at Oxford and at Paris. On his return Henry VIII made him his chaplain and librarian, and gave him the title of royal antiquary. In 1533 he was empowered, by a commission under the great seal, to search for objects of antiquity in the archives and libraries of all cathedrals, abbeys, priories, etc., and having spent six years in traveling for this purpose, he retired to his house in London to arrange and methodize the mass of historical material acquired. He died insane, however, in 1552, without having completed his task. The great bulk of his collections was ultimately placed in the Bodleian Library in an indigested state. Hearne printed a considerable part, forming the *Itinerary of John Leland* and *Leland Antiquarii de*

Rebus Britannicis Collectanea. His collections have been sedulously mined by subsequent antiquaries.

Leland Stanford, Jr., University, a co-educational, non-sectarian institution at Palo Alto, California. It was founded in 1885 by Leland Stanford and his wife in memory of their son, who died in 1884, in his seventeenth year. The endowments amount to over $30,000,000. Its site covers 900 acres. The buildings are notable for their architecture, which reproduces the style of the old Spanish missions. The curriculum includes the usual courses, but considerable liberty is allowed in the matter of 'electives.' The attendance in 1914 was 1879, and the number of instructors, 229. The library contains 240,000 volumes.

Lely (lē'li), SIR PETER, painter, born at Soest, in Westphalia, in 1617 or 1618. Lely or Le Lys was properly a nickname borne by his father, whose family name was Van der Vaes. He was first instructed by Peter Grebber at Haarlem, but went to England in 1641, and commenced portrait painting. He finished portraits both of Charles I and of Cromwell; but it was not until the Restoration that he rose to the height of his fame. He fell in with the voluptuous taste of the new court, and was in great favor with Charles II, who knighted him. He died in 1680. The Hampton Court Collection of portraits of the ladies of the court of Charles II contains some of his best work; the finest of his few historical works being the *Susannah and the Elders*, at Burleigh House.

Lemaître (leh-mā'tr), JULES, a French critic and poet, born at Vennecy in 1853; died in 1914; held a professorship at Grenoble, but resigned it in 1884 to devote himself to literature; he was made a member of the French Academy in 1896. He wrote *La Comédie après Molière, Les Contemporains, Dix Contes, Les Rois, Jean Jacques Rousseau*, etc., and a number of plays.

Leman (lē'man), LAKE, a name sometimes given to the Lake of Geneva. See *Geneva, Lake of.*

Lemberg (lem'berg; Polish *Lwow*), a city of Poland, capital of the province of Galicia, on the Peltew, 212 miles E. S. E. of Cracow. Though founded in the thirteenth century, it has all the appearance of a modern town from its rapid increase in recent times. Besides being the seat of the government, and the important courts and public offices necessarily connected with it, it possesses three metropolitan sees—Greek, Armenian and Roman Catholic. It has a university (library 86,000 volumes), attended by about 1400 students; and the Ossolinsk Literary Institute (library 78,000 volumes). The manufactures are extensive and varied, and there is a large trade. In the European war (q. v.) it was taken by the Russians in 1914; retaken by Austrians and Germans in 1915. Pop. 212,000.

Lemma (lem'a), in mathematics, a preliminary proposition, laid down in order to clear the way for some following demonstration, and prefixed either to theorems, in order to render their demonstration less perplexed and intricate, or to problems, to make their solution more easy and short.

Lemming (lem'ing), a rodent mammal very nearly allied to the mouse and rat. There are several species, found in Norway, Lapland, Siberia, and the northern parts of America. The most noted species is the common or

Common Lemming (*Myōdes Lemmus*).

European lemming (*Myōdes Lemmus*), of which the body color is brownish variegated with black; the sides of the head and belly white, or of a grayish tint. The legs and tail are of a gray color. The head is large and shortened, the body thick-set, and the limbs stout. It feeds on plants, and is exceedingly destructive to vegetables and crops. It burrows under the ground at a limited depth. It is very prolific, and vast hordes sometimes migrate towards the Atlantic and the Gulf of Bothnia, destroying all vegetation in their path. Great numbers of wild animals—bears, wolves, foxes—hang upon them in their march, making them their prey, thus tending to keep their numbers in some degree in check. Many of them are drowned in the sea.

Lemna. See *Duck-weed.*

Lemnian Earth (lem'ni-an), a kind of astringent medicinal earth, of a fatty consistence and reddish color, used in the same cases as bole. It removes impurities like soap. It was originally found in Lemnos, but occurs also in Bohemia, Russia and India, resulting from decay of felspathic rocks,

like kaolin, to which it is related. Called also *Sphragide.*

Lemniscata (lem-nis-ka'ta), or LEMNISCATE, in geometry, the name given to a curve having the form of the figure 8, with both parts symmetrical.

Lemnos (lem'nos; Italian *Stalimene*), the most northerly island of the Grecian Archipelago, between the Hellespont and Mount Athos. It has an area of 147 square miles, and abounds in vines, wheat, etc. The principal town on the island is Limno, or Kastro. Lemnos formerly contained a volcano, Mosychlus, which was regarded as the workshop of Hephaistos (Vulcan). Pop. about 30,000.

Lemoine (lê-mwân), FRANÇOIS, a French historical painter, born in 1688. In 1718 he became a member of the Academy, and on his return from a visit to Italy in 1723 was appointed professor at the Academy. He painted the chapel of the Holy Virgin in the Church of St. Sulpice, and subsequently the ceiling in the Hall of Hercules at Versailles, a painting 64 feet long and 54 broad, which occupied him seven years. In a fit of insanity he put an end to his life in 1737.

Lemon (lem'un), the fruit of the lemon tree (*Citrus Limonum*), originally brought from the tropical parts of Asia, but now cultivated very extensively in the south of Europe, especially in Sicily. It is congeneric with the orange and citron, and belongs to the natural order Aurantiaceæ. It is a knotty-wooded tree of rather irregular growth, about 8 feet high; the leaves are oval, and contain scattered glands which are filled with a volatile oil. The shape of the fruit is oblong, and its internal structure is similar to that of the orange. The juice is acid and agreeable; and in addition to its use in beverages is employed by calico-printers to discharge colors. As expressed from the ripe fruit it has a specific gravity of 1.04, and contains about 1.5 per cent. of citric acid. It also contains sugar, albuminous and vegetable matters, and some mineral matter, nearly half of which consists of potash. The *oil of lemon* is a volatile oil of yellow or greenish color got from the fresh rind of the lemon. It is used in perfumery, and in medicine as a stimulant and rubefacient; it also forms an ingredient of syrup of lemon and tincture of lemon.

Lemon, MARK, humorist and dramatic writer, born in London in 1809. He made his first literary essays in the lighter drama, supplying the London stage with more than sixty pieces, farces, melodramas and comedies. On the establishment of *Punch* in 1841 he became joint editor with Henry Mayhew, and two years later sole editor. He was also the literary editor of the *Illustrated London News*, and an occasional writer for Dickens' *Household Words*, *Once-a-Week*, and other periodicals. Among his later productions are some novels of average merit. He died in 1870.

Lemonade (lem'un-âd), a drink made of water, sugar and the juice of lemons. A good recipe is: two sliced lemons, 2½ oz. of sugar, boiling water, 1½ pints; mix, cover up the vessel, let it stand, with occasional stirring, till cold, then strain off the liquid. Aerated bottled lemonade may be prepared by putting lemon syrup into a bottle, and filling up with aerated water at a bottling machine.

Lemon-kali, a name sometimes given to the effervescing beverage formed by mixing lemon-juice with dissolved bicarbonate of potash.

Lemons, SALT OF, acid potassium oxalate, called also *salt of sorrel.*

Lempriere (lem'pri-âr), JOHN, a native of the island of Jersey, born about 1750, was graduated at Oxford as A.M. in 1792, in which year he became head-master of Abingdon grammar school. He was afterwards master of the free grammar school at Exeter. In 1811 he was presented to the rectory of Meeth, Devonshire, which living, together with that of Newton Petrock, in the same county, he held till his death. His *Classical Dictionary*, published in 1792, was of great value in its day. Among his other works was a *Universal Biography*, published in 1808. He died in 1824.

Lemur (lê'mur), a name popularly given to any member of the Lemuroida, a suborder of the Quadrumana or Monkeys, but more strictly confined to members of the family Lemuridæ. Their zoological position has been a matter of considerable debate, as they possess characteristics which distinguish them from the monkeys, and ally them with the insectivores and rodents. The simplest classification places them, however, with the lower Quadrumana. The Lemuridæ or True Lemurs are specially distinguished by the habitually four-footed or quadrupedal mode of progression. The tail (except in the short-tailed Indris) is elongated and furry, but is never prehensile. The hind limbs are longer than the forelimbs; the second toe in the hind foot being long and claw-like, and the nails of all the other toes being flat. The fourth digit of the hand, and especially of the foot, is longer than the others. The thumb can always be

opposed to the other fingers, and has a broad, flattened nail. The ears are small and the eyes large. The incisor teeth are generally four, the canines two, and the molars twelve in each jaw. The true lemurs are exclusively confined to Madagascar and neighboring islands, but other members of the family are found in Africa and as far east as the Philippines.

Lemures (lem'ū-rēz), among the ancient Romans, the name given to the ghosts or souls of the dead. In order to appease them a ceremony called *lemuria* was observed on the nights of May 9th, 11th and 13th.

Lemuria (le-mū'ri-a), a hypothetical continent supposed by some to have at one time extended from Madagascar and S. Africa across what is now the Indian Ocean to the Asiatic Archipelago; named from its corresponding with the habitat of the lemurs.

Lemuroida. See *Lemur*.

Lena (lē'nȧ), a river of Siberia, one of the largest in the world, rising on the northwestern side of the mountains which skirt the western shore of Lake Baikal, about 70 miles E. N. E. of Irkutsk. It flows in a winding course, and discharges itself through several branches into the Arctic Ocean in lat. 73° N., and lon. about 128° E. Its course, windings included, is about 2770 miles.

Lenine, NIKOLAI, leader of the Bolsheviki government in Russia, which supplanted the Kerensky régime, was born at Simbirsk, Volga, in 1870; son of a Russian nobleman. He received a university education, studied law and was called to the bar. To combat Czarism he founded the first Social-Democratic organization in Russia, the Petersburg Union for the Emancipation of the Working Classes, and published an exhaustive *History of Capitalism in Russia* under his real name, Ulianoff. He was exiled to Siberia and later lived in Munich, London, and Geneva, where he started *The Iskra* (*The Spark*), a Social-Democrat paper, and preached orthodox Marxism as opposed to the moderate Socialism then prevalent in Russia and Germany. Leon Trotzky (*q. v.*), who had also been exiled to Siberia, made his escape and joined the staff of *The Iskra*. It was these two men who took the government of Russia into their hands in 1917 and concluded a separate peace with the Central Powers. During the first revolution of 1905 Lenine was chief editor of *New Life*, the first Socialist daily in Petrograd. When the revolution was quashed Lenine went to Finland, but being pursued by the Russian police he went to Geneva and then to Cracow. He was in Cracow when the war broke out in 1914 and was arrested by the Austrians, but subsequently released. He removed to Switzerland and remained there till the early months of the revolution of 1917 which resulted in the overthrow of Nicholas II. He gained permission to pass through Germany to Russia and at once placed himself at the head of the Maximalists, or Bolsheviki. See under *Russia* for text of treaty which he negotiated.

Lenkoran (len-kō-rän'), a Russian town and harbor on the Caspian Sea near Baku. Pop. 8768.

Lennep (len'ep), a town of Prussia, province of Rheinland, 21 miles E. S. E. of Düsseldorf, with worsted and woolen manufactures. Pop. 10,323.

Lennep, JACOB VAN, a Dutch novelist, historian and dramatist, born in 1802; died in 1868. He was a successful advocate, and was attorney-general for North Holland. In literature he was representative of the romantic movement in Holland. He left upwards of thirty plays, a collection of poems, and several historical works, but is perhaps best known by his historical romances, *De Roos van Dekama*, *Klaasje Zevenster*, etc.

Lenni-Lenape (len'i len'a-pē), the name by which the Delaware Indians called themselves. See *Delaware*.

Lennox (len'oks), CHARLOTTE RAMSAY, novelist, was born in New York in 1720, but lived from the age of fifteen in London, where she died in 1804. She was friendly with Richardson and Johnson, who is said to have written the last chapter of the *Female Quixote* (1752), the best known of her works. Her other works included *Shakespere Illustrated* (1753-54), a collection of the tales used by Shakespere for his dramas, a translation of *Sully's Memoirs*, *Henrietta* (1758), *Philander* (1758), and *Sophia* (1763).

Lenormant (lē-nor-mäṇ), CHARLES, a French archæologist, born in 1802; in 1825 made inspector of fine arts. He accompanied Champollion to Egypt in 1828, and afterwards became chief of the section of fine arts at the ministry of the interior, professor at the Sorbonne, and professor of Egyptian archæology at the College of France. He left a considerable number of treatises in various departments of archæological research. He died in 1859.

Lenormant, FRANÇOIS, a French archæologist, born in 1837; son of Charles Lenormant. After traveling in the East he became, in 1874,

professor of archæology at the Bibliothèque Nationale. He died in 1883. He was an authority on the Cuneiform inscriptions and the Accadian language.

Lenox (len'oks), JAMES, philanthropist, born in New York city, in 1800. From his father he inherited several millions of dollars. For half a century his time was devoted to the forming of a library and gallery of paintings, which he conveyed to New York city in 1870, the total value being over $2,000,000. He was a liberal donor to many churches and charities. He died in 1880.

Lenôtre (lē-nōtr), ANDRÉ, a French architect and ornamental gardener, born in 1613. His plans for the decoration of the park of Versailles contributed principally to establish his reputation. He afterwards embellished the gardens of Trianon, Chantilly, St. Cloud, Sceaux, the Tuileries, etc. Louis XIV in 1675 bestowed on him letters of nobility. He died in 1700. His style of ornamental planting was fashionable in Britain, till it was superseded by the designs of Kent, Brown, and the modern landscape gardeners.

Lens, a transparent substance, usually glass, so formed that rays of light passing through it are made to change their direction, and to magnify or diminish objects at a certain distance.

SECTIONS OF LENSES.

a, Plano-concave. *b*, Double concave.
c, Plano-convex. *d*, Double convex.
e, Meniscus. *f*, Concavo convex.

Lenses are double convex, or convex on both sides; double concave, or concave on both sides; plano-convex, or plano-concave, that is, with one side plane and the other convex or concave, or convex on one side and concave on the other. If the convexity be greater than the concavity, or if the two surfaces would meet if produced, the lens is called a *meniscus;* and if the concavity be greater than the convexity, the lens is termed *concavo-convex.* See *Optics, Microscope, Telescope.*

Lens (lāns), a town in the Department of Pas-de-Calais, France, on the Deule, ten miles northeast of Arras. It is located in the midst of extensive coal fields and in 1914 had a number of large engineering works, iron and steel foundries and sugar and soap factories. The population numbered 31,746 in 1911. During the European war the town was reduced to a mass of roofless houses and rubbish heaps. It was in the center of the fiercest fighting, and it was here that the Canadian forces played havoc with the German armies. The Germans held the town, but their casualties were enormous. They had provided underground tunnels reinforced by concrete, but the Canadians blew up the tunnels with heavy shells that pierced deep and exploded with fearful effect. Thousands died in these underground passages, which became death traps. Many times the Canadians filled the town of Lens with poison gas (first introduced in warfare by the Germans), which soaked down into the dugouts and stifled the Teutons before they had time to put on their masks.

Lent, the forty days' fast in spring, beginning with Ash Wednesday and ending with Easter Sunday. In the Latin Church Lent formerly lasted but thirty-six days; in the fifth century four days were added, in imitation of the forty days' fast of the Saviour, and this usage became general in the Western Church. The close of Lent is celebrated in Roman Catholic countries with great rejoicings, and the carnival is held just before it begins. The English Church has retained Lent and many other fasts, but gives no directions respecting abstinence from food.

Lentibulariaceæ (len-tib-yu-la-ri-ā'-ce-ē), a small nat. order of monopetalous exogens, growing in water or in marshy places, sometimes epiphytes. The flowers (often large and handsome) are usually yellow, violet, or blue. There are four genera, of which Utricularia (bladderwort) and *Pinguicula* (butterwort) are the best known.

Lentil (len'til; *Ervum lens*), a plant belonging to the papilionaceous division of the nat. order Leguminosæ, cultivated in Southern and Central Europe. It is an annual, rising with weak stalks about 18 inches, and with British flowers hanging from the axils of the leaves. Two varieties are cultivated—the large *garden lentil* and the common *field lentil*—the former distinguished by its size and the greater quantity of mealy substance which it will afford. The straw of lentils makes good fodder. As food for man the seeds are very nutritious, and in Egypt, Syria, etc., are a chief article of diet. In Great Britain their use for food has increased of late years, and it is to them that the foods advertised as *revalenta* or *ervalenta* owe their name. They are also coming into use in United States.

Lentini (lĕn-tē'nē), a town of Sicily, province of Syracuse. It has interesting ruins, and enjoys a considerable trade. Pop. 11,134.

Lentiscus (len-tis'kus), or LENTISK, the mastich tree Pistacia *lentiscus*), a tree of the nat. order Anacardiaceæ, a native of Arabia, Persia, Syria and the south of Europe. The wood is of a pale brown, and resinous and fragrant. See *Mastic*.

Lento (len'tō; Italian, *slow*), a term used in music; rather faster than adagio.

Leo (lē'ō), the Lion, the fifth sign of the zodiac, between Cancer and Virgo. The sun enters it about July 22, and leaves it about August 23. The constellation contains 95 stars, and is noteworthy for its remarkable nebulæ. There is also a constellation of the northern hemisphere known as Leo Minor, and containing 53 stars.

Leo I, ST. LEO, called *the Great*, pope, born about 390. The Popes Celestine I and Sixtus III employed him in important ecclesiastical affairs, and on the death of Sixtus III in 440 he was elevated to the papal chair. The beginning of his pontificate was marked by condemnation of all holding the Manichean, Pelagian, Priscillian and Eutychean heresies. He was employed by Valentinian to intercede for peace with Attila, who, at his request, evacuated Italy. From the Vandal Genseric, however, he was unable to obtain more than the promise to forbid the murder of the citizens, the burning of the city, and the plunder of the three principal churches in Rome. His death took place in 461. He is the first pope whose writings—sermons, letters, etc.—have been preserved. In his earnest effort to keep the Archbishop of Constantinople from having himself declared primate of the East at the Council of Chalcedon in 451, he was defeated by the ambition of that prelate and the emperor.

Leo III, a Roman by birth, elected pope on the death of Adrian I in 795. He commenced his rule by making submission to Charlemagne, so that when driven from Rome in 799 by his rival Paschal, Charlemagne reëstablished him on his throne, receiving from him in 800 the imperial crown. Leo died in 816.

Leo X, GIOVANNI DE MEDICI, second son of Lorenzo the Magnificent, born at Florence in 1475, received the tonsure in his seventh year, and was loaded with benefices. In 1488, when only thirteen years old, he was made a cardinal, and in 1492 took his seat as a member of the Holy College at Rome. Pope Julius II made him governor of Perugia, and in 1511 placed him, with the title of Legate of Bologna, at the head of his forces in the holy league against France. He was made prisoner by the French at the battle of Ravenna in 1512, but soon after regained his freedom and returned to Bologna, where he conducted the government as legate. After contributing to the reëstablishment of the Medici he remained at Florence until the death of Julius II recalled him to Rome. Although only a deacon, he was chosen to succeed Julius in 1513. He made a favorable peace with Louis XII, who was compelled to abandon Italy, and public tranquillity being thus restored in the first year of his government, he gave all his attention to the promotion of literature and the arts. The university at Rome was restored and endowed; a society established for the publication of Greek authors, and great encouragement given to scholars. In 1515 he had an interview with Francis I at Bologna, and formed with him a concordat, which remained in force nearly three hundred years, and gave to the king the right to nominate bishops in his own dominions. To procure money, particularly for the completion of St. Peter's, he encouraged the sale of indulgences, an abuse which incidentally promoted the Reformation, in calling forth the attacks of Luther. Leo died suddenly in 1521.

Leo XIII, born JOACHIM PECCI, in 1810, at Carp'aeto, Italy. He became a chaplain of Gregory XVI in 1837, bishop of Daniretta in 1843, archbishop, and bishop of Perugia in 1846, and was made a cardinal priest in 1853 by Pius IX, whom he succeeded as pope in 1878. As such he was opposed to radical measures and extreme views, though he strongly held for the temporal dominion of the papacy. He died in 1903.

Leoben (lā-ō'ben), a town of Austria, in Styria, 44 miles N. N. W. of Gratz, on the right bank of the Mur. Pop. 10,204.

Leominster (lem'stĕr or lem'in-stĕr), an old municipal borough and market town of England, county of Hereford, 12 miles north of Hereford, in a fertile valley on the right bank of the Lugg. The spacious priory church (restored and enlarged in 1863 and 1879) exhibits fine specimens of Norman and early English architecture. Leather glovemaking is the chief industry. Pop. (1911) 5707.

Leominster (lem'in-stĕr), a town of Worcester County, Mas-

sachusetts, on the Nashua River, 40 miles W. N. W. of Boston. It is the center of the comb manufacture of the state; also produces paper, pianos, buttons, jewelry and toys. Pop. 17,580.

Leon (lā-ōn'), one of the old divisions of Spain, formerly a kingdom, is bounded north by Asturias, east by Old Castile, south by Estremadura, and west by Portugal and Galicia. It is now divided into the provinces of Leon, Zamora and Salamanca.

Leon, a city of Spain, capital of the province and ancient kingdom of the same name, 176 miles northwest of Madrid. It is for the most part in a somewhat decayed condition. The principal edifices are the cathedral, a beautiful specimen of the purest Gothic; the Church of San Isidoro, an ancient massive structure; and the fine old palace, called La Casa de los Guzmanes. Pop. 15,580. —The province has the Asturias as its northern boundary, a branch of which mountains divides it into two portions. The western portion is adapted rather for pasture than tillage, but the eastern has wide and undulating plains, on which the vine and various grain crops are successfully cultivated. Area, 5986 square miles. Pop. 386,083.

Leon, a town of Central America, capital of the department of Leon, state of Nicaragua, on a large and fertile plain near the Pacific coast. It is regularly built, and the public buildings, which are considered among the finest in Central America, include a massive cathedral, an old episcopal palace, a new episcopal palace, and several churches. A railway connects it with the coast at Corinto. The town has suffered a good deal from the civil wars. Pop. about 60,000.

Leon, a city of Mexico, State of Guanajuato, on a fertile plain more than 6000 feet above sea-level, a well-built place, with flourishing industries of various kinds, which its railway connections are helping to develop. It is one of the most thriving towns of Mexico. Pop. (1910) 57,722.

Leon, a province of Central Ecuador, area 2590 square miles. In its N. E. portion is the volcano of Cotopaxi. Pop. about 125,000.

Leonardo da Vinci. See *Vinci.*

Leonard's, St. See *Hastings.*

Leonforte (lā-ōn-fōr'tā), a town of Sicily, in the province of Catania, and 27 miles W. N. W. of Catania. It carries on a considerable trade in corn, wine and silk. Pop. 19,751.

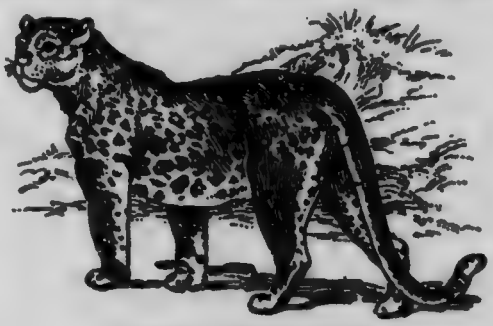
Leonidas (le-on'i-das), in Greek history, a king of Sparta, who ascended the throne 491 B.C. When Xerxes invaded Greece, the Greek congress assigned to Leonidas the command of the force destined to defend the pass of Thermopylæ. His force, according to Herodotus, amounted to over 5000 men, of whom 300 were Spartans. After the Persians had made several vain attempts to force the pass, a Greek named Ephialtes betrayed to them a mountain path by which Leonidas was assailed from the rear, and he and his followers fell after a desperate resistance (B.C. 480).

Leonine Verse (lē'u-nin), a kind of Latin verse, in vogue in the middle ages, consisting of hexameters and pentameters, of which the final and middle syllables rhyme; so called from Leo or Leonius, a poet of the twelfth century, who made use of it. The following distich may serve as an example, being the Latin version of 'The devil was sick,' etc.:

'Dæmon languebat, monachus tunc esse volebat;
Ast ubi convaluit, mansit ut ante fuit.'

Leontodon (lē-on'to-don). See *Dandelion.* But dandelion is often put in a separate genus, *Taraxacum* (being called *T. officinale* or *T. dens-leonis*), certain allied plants being assigned to *Leontodon.*

Leopard (lep'ard; *Felis leopardus*), a carnivorous mammal inhabiting Africa, Persia, India, China, etc., by some regarded as identical with the panther. The ground or general body-color of both is a yellowish fawn, which



Leopard (*Felis leopardus*).

is slightly paler on the sides, and becomes white under the body. Both are also marked with black spots of various sizes, irregularly dispersed, a number of them being ring-shaped. The African animal seems to have these ring-spots chiefly on the back, and to this form some would specially assign the name of leopard. It

preys upon antelopes, monkeys, and the smaller quadrupeds, rarely attacking man unless itself attacked. It can ascend trees with great ease, often using them both for refuge and ambush. It is not infrequently trapped by means of pitfalls. Besides the common leopard there is also a useful and docile Asiatic species, the chetah or hunting leopard (*Felis jubata*). See *Chetah*.

Leopardi (lā-o-par'dē), GIACOMO, COUNT, an Italian poet and scholar, born in 1798. He conducted his own education, and at an early age he had written a *History of Astronomy*, and translated, with learned notes, Porphyry's *Life of Plotinus*. He also translated into Italian verse the *Battle of the Frogs and Mice*, some fragments of the *Odyssey*, etc. A commentary on Petrarch, and an essay on the errors of the ancients, appeared in 1815; and in 1818-20 an ode to Italy and other poems raised him to the first rank of lyric poets. He lived at various times in Rome, Milan, Bologna, Florence, almost constantly a victim of ill health; in 1833 he removed to Naples, where he died in 1837.

Leopard's-bane, *Doronicum pardalianches*, nat. order Compositæ, a robust plant, with large, roughish leaves and conspicuous, yellow flower-heads.

Leopard-wood, the wood of *Brosimum Aublettii*, a tree of Trinidad and Guiana, allied to the cow tree.

Leopold I (lē'u-pōld), King of the Belgians, son of a Duke of Saxe-Coburg, was born in 1790. In 1816 he married the Princess Charlotte, heir-apparent of Great Britain, who died in 1817. In 1831 he accepted the crown of Belgium. He married a daughter of King Louis Philippe of France. He was popular among his subjects, being liberal and attentive to their constitutional rights. He died in 1865.

Leopold II, King of the Belgians, was born in 1835, and succeeded his father, Leopold I, in 1865. As Duke of Brabant, he had been an active legislator before his accession. Queen Charlotte, his wife, was a niece of Francis Joseph of Austria. During his reign Belgium became the administrator of the Congo Free State, and Leopold its sovereign. He was accused of working the natives cruelly in his own interests and of growing wealthy from the fruits of their enforced labor. He surrendered his sovereignty over this state to the government of Belgium in 1907, and died in December, 1909, being succeeded by his son Albert.

Leopold I. See *Germany*.

Lepadidæ (le-pad'i-dē), the barnacles or goose-mussels, a family of cirriped crustaceans, free-swimming when in the larval state, but when adult attached by the antennæ to submarine bodies. See *Barnacle*.

Lepanto (lē-pan'tō), or EPAKTO (ancient *Naupactus*), a seaport town of Greece, in the nome of Phokis, on the Gulf of Corinth or Lepanto, near the Strait of Lepanto. Its harbor is now silted up, but it was anciently of considerable importance. It is memorable for the naval battle, from which dated the decline of the Turkish power in Europe, fought within the gulf on October 7, 1571, between the Ottoman fleet and the combined fleets of the Christian states of the Mediterranean, under Don John of Austria, when the former, consisting of 200 galleys and 60 other vessels, was destroyed.—The strait connects the Gulf of Corinth with the Gulf of Patras, and is about 1 mile wide at its narrowest part.

Lepas (lep'as), the generic name of barnacles. See *Lepadidæ* and *Barnacle*.

Leper. See *Leprosy*.

Leper-houses (lep'ér), houses for the treatment of leprosy; once very numerous in England, nearly every important town having one or more of these houses. The house of Burton Lazars in Leicestershire, built by a general subscription raised over England in the time of King Stephen, was the head of all lazar-houses in England. It was dependent on the leper-house at Jerusalem. From the Crusades until the Reformation these houses flourished and multiplied. Gradually, however, as better habits and treatment began to diminish diseases of the class for which they were used, these houses declined, and were abandoned or appropriated to other objects.

Lepidium (lep-id'i-um), an extensive genus of herbs or undershrubs of the nat. order Cruciferæ. *L. sativum* is the common garden-cress.

Lepidodendron (lep-i-dō-den'dron; Greek *lepis*, scale, and *dendron*, tree), a genus of fossil plants, cryptogamic and acrogenous. The stalks are dichotomous, the leaves simple, linear, or

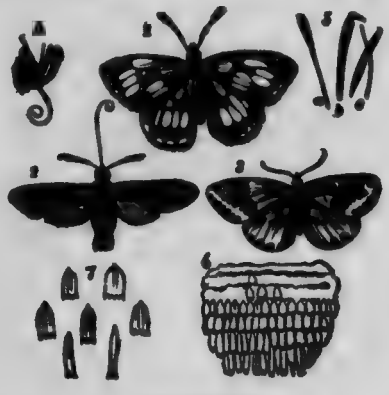
Lepidodendron Sternbergii.

lanceolate, but only towards the extremity. Their internal structure is intermediate between that of the Coniferæ and Lycopodiaceæ. They are found only in the coal-measures. Some of the species were of immense size, fragments of stems being found upwards of 40 feet in length.

Lepidoganoidei (lep-i-dō-ga-noi'de-i), a suborder of ganoid fishes, distinguished from the placoganoid fishes by their external covering consisting of scales, and not, as in the latter, of plates. The best-known living fishes belonging to the Lepidoganoidei are the bony pike and the polypterus.

Lepidolite (le-pid'o-lit), or LITHIA MICA, a species of mica occurring in oblique rhombic or hexagonal prisms, or in masses composed of small, crystalline scales. Its color is pink or peach-blossom, passing into gray; luster pearly; easily split into thin, translucent, flexible scales or plates. The mineral is one of the principal sources of the metal lithium.

Lepidoptera (lep-i-dop'te-ra; Greek, *lepis*, a scale; *pteron*, a wing), the scientific name of the order of insects which includes the butterflies and moths (which see), and which is so named from the presence of innumerable small, membranous scales, which come off like fine dust or powder when the wings (four in number) are touched by the finger. The scales are merely modifications of the hairs with which the wings of most other insects are covered; and from the presence of these scales the beautiful tints and colors of the lepidopterous insects are derived. The Butterflies form the *diurnal* Lepidoptera; while the Moths, flying about chiefly at twilight or during the night, are termed *crepuscular* or *nocturnal* Lepidoptera.



LEPIDOPTERA.

1, Butterfly—*Hipparchia galathea*, marbled white butterfly. 2, Hawk-moth or sphinx—*Macroglossa stellatarum*, humming-bird hawk-moth. 3, Moth—*Abraxas grossulariata*, magpie moth. 4, Palpi and spiral mouth of butterfly. 5, Antennæ—*a*, Butterfly's; *b*, Sphinx's; *c*, Moth's. 6, Portion of wing of cabbage-butterfly, with part of the scales removed. 7, Scales of same, magnified.

Lepidosiren (lep-i-dō-sī'ren), the scientific appellation of the mud-fishes. See *Dipnoi*.

Lepidosteus (lep-i-dos'te-us), the generic name of the bony pike of the North American lakes. See *Bony Pike*.

Lepidus (lep'i-dus), M. ÆMILIUS, a Roman triumvir, prætor B.C. 49, consul with Julius Cæsar in 46, and in 44 appointed by Cæsar to the government of Narbonese Gaul and Nearer Spain. He was in Rome at the time of Cæsar's death, and joined Mark Antony. In 43 he united with Antony and Octavianus to form the triumvirate, obtaining Spain and Narbonese Gaul as his share in their division of the empire. After the battle of Philippi (42) a redivision took place, in which Lepidus received Africa, where he remained till 36, when he was summoned by Augustus to assist him against Sextus Pompey. He then tried to seize Sicily, but was overcome by Augustus, who removed him from the triumvirate, and banished him to Circeii, where he lived under strict surveillance. He died in B.C. 13.

Lepismidæ (lep-is'mi-dē), a family of minute wingless insects belonging to the order Thysanura, having the abdomen furnished at its extremity with three caudal bristles, which are used in leaping. The common species (*Lepisma saccharina*) is found under wet planks or in similar damp situations.

Leporidæ (lep'or-i-dē), the hare tribe, or the family of rodents of which the genus *Lepus* is the type.

Leprosy (lep'ro-si; Greek, *lepros*, rough), a name applied at one time to several different skin diseases characterized by roughness or scaliness. True leprosy is the elephantiasis of the Greeks, the lepra of the Arabs, whose old English name was the *myckle ail* or great disease. It is to be distinguished from the elephantiasis of the Arabs, which is a local overgrowth of skin and subcutaneous tissue. There are several well-marked types. The first is characterized by the formation of nodules or tubercles in the skin, common about the eyebrows, where they destroy the hair, and produce a frowning or leonine aspect. After a time the nodules break down, forming ulcers, which discharge for a time, and may cause extensive destruction and de-

formity. The tubercles may form in the nostrils; in the throat, altering the voice; on the eyelids, extending into and destroying the eyeball. In the second type the chief features are insensibility and numbness of parts of the skin, accompanied by deep-seated pains, causing sleeplessness and restlessness. In a third variety much mutilation occurs owing to the loss of bones, chiefly of the limbs, a portion of a limb being frequently lopped off painlessly at a joint. All these varieties begin with the appearance on the skin of blotches of a dull coppery or purplish tint, the affected part being thickened, puffy and coarse looking. When the redness disappears a stain is left, or a white blotch. Leprosy is now believed to be caused by a minute organism—a bacillus (see *Germ Theory of Disease*), and to be contagious. Though the disease is not so widespread as at one time it was, it still prevails in Norway and Iceland, the coasts of the Black Sea and Mediterranean, in Madagascar, Mauritius, Madeira, the Greek Archipelago, East and West Indies, Palestine, the Pacific Islands, etc. In Hawaii an island is set aside expressly for the residence of lepers, they being removed thither as soon as the disease appears.

Lepsius (lep'se-us), KARL RICHARD, a distinguished German Egyptologist, born in 1810; died in 1884. After studying at Leipsig, Göttingen and Berlin, he carried on studies and researches at Paris, Rome and London, and he also made two visits to Egypt. He was professor in the Berlin University, director of the Egyptian section of the royal museum, director of the royal institute, head of the royal library, etc. He was author of a large number of important works on Egyptian subjects.

Leptocardia (lep-to-kar'dē-a), Müller's name for the lowest order of fishes, represented by the lancelet, now called Pharyngobranchii.

Lepus (lep'us), the genus of rodents which comprises the hares and the rabbits.

Lerici (lā'ri-chē), a seaport of Northern Italy, in the province of Genoa, on the eastern shore of the Gulf of Spezzia, 57 miles E. S. E. of Genoa. Pop. 9326.

Lérida (lā'rē-thā; ancient *Ilerda*), town of Spain, province of Lerida, Catalonia, on the right bank of the Segre, here crossed by a handsome bridge of seven arches, 84 miles W. N. W. of Barcelona. As the key of Aragon and Catalonia it was early fortified, and still continues to be one of the most important military points in Spain. It was long the seat of a university; has manufactures of textiles, glass, etc. Pop. 24,531.—The province, bounded north by France, has an area of 4690 square miles traversed by ramifications of the Pyrenees. Pop. 274,590.

Lérins (lā-ran), THE, several small islands off the south coast of France. The largest, St. Marguerite, is occupied by a prison, especially famous as the residence for twelve years of the Man in the Iron Mask. The second, St. Honorat, contains the ruins of a once celebrated monastery.

Lerma (lér'ma), FRANCISCO GOMEZ DE SANDOVAL Y ROJAS, DUKE OF, born about 1550, Spanish minister under Philip III from 1598 to 1618. His career was chiefly marked by the unfavorable terms on which he concluded peace with England (1604) and the United Provinces (1608); and by the decree of proscription issued in 1609, which drove thousands of Moorish families from Spain and confiscated much of their property. Under Philip IV his administration of the treasury was challenged, and he was compelled to refund considerable sums. He died in 1625.

Lermontoff (ler'mon-tof), MICHAEL, a Russian poet, born in 1814; killed in a duel in 1841. He was for a time an imperial page, and then an officer of the guard. His first important poem, on the death of Pushkin, caused his temporary banishment to the Caucasus. His poems, which include *The Novice*, *The Demon*, *Ismail Bey*, etc., belong to the Byronic school.

Lernæadæ (ler-nē'a-dē), a group of parasitic suctorial crustaceans, of the order Ichthyophthira or fishlice, having the mouth armed with piercing mandibles, and found attached to fishes. The young lernæan as it first comes from the egg is provided with eyes, antennæ and locomotive limbs, but the limbs, eyes and other organs of sense disappear when it assumes the parasitic condition.

Lero (lē'ro; ancient, Leros), a Turkish island in the Ægean, off the coast of Asia Minor, 35 miles south of Samos; length 6 miles, width 4 miles; pop. 3000.

Leroux (lē-rō), PIERRE, a writer on social and economic questions, born at Paris in 1798. For some time his journal, the *Globe*, was an important Saint-Simonian organ, but he afterwards withdrew from that body. He was editor of the *Revue Encyclopédique* (1832), and part editor of the *New Encyclopedia* (1838). He was afterwards associated with Biardot and George Sand

in founding the *Revue Indépendante* (1841), and sat in the National Assembly (1848) as an extreme radical. From 1851 to 1869 he lived in Jersey and Switzerland, but returned to Paris after the amnesty, and died there in 1871. His chief work was *De l'Humanité* (1839).

Lerwick (ler'wik), a seaport town of Scotland, capital of Shetland, in Bressay Sound, on the southeastern shore of Mainland. There are no manufactures of consequence; but the trade, favored by the fine anchorage in the bay, is considerable. Many of the inhabitants are employed in the fisheries. Pop. 4654.

Le Sage, or LESAGE (lē-säzh), ALAIN RENÉ, a French novelist and dramatic writer, born in 1668 at Sarzeau, in Brittany. He studied at the college of the Jesuits at Vannes, in 1692 went to Paris to study law, and in 1694 he married. To procure a livelihood he abandoned law for literature, his first attempts being in imitation of the Spanish drama. He subsequently translated Avellaneda's continuation of the *Adventures of Don Quixote*, and adapted a play from Calderon; but his first success was with his *Crispin Rival de son Maître* (1707). This was followed by *Turcaret*, his theatrical masterpiece, and one of the best comedies in French literature. *Le Diable Boiteux*, imitated from a Spanish romance, *El Diablo Cojuelo*, appeared the same year. In 1715 he published the first two volumes of *Gil Blas*, one of the best romances in the French language, the third volume appearing in 1724, the fourth in 1735. In 1732 he published *Les Aventures de Guzman d'Alfarache* (based on Aleman's work). In 1734 appeared *L'Histoire d'Estevanille Gonzales*. The last of his novels was *Le Bachelier de Salamanque* (1738). He died in 1747.

Lesbos (les'bos), a Greek island situated off the northwest coast of Asia Minor, now called *Mitylene*, from its capital. In shape it is nearly triangular; has an area of 276 square miles, and a population of about 25,000. Acquired by Greece from Turkey on June 13, 1914. It is mountainous, but is exceedingly fertile, its principal products being figs, grapes, olive-oil and pine timber. The island formerly contained nine cities, the chief being Mitylene. It was a flourishing state in ancient times, till conquered by Athens, and was the birthplace of the poets Alcæus and Sappho.

Lescovats (les'ko-vätz), LESCOVAC, a town in Servia, between Nish and Vranya, the headquarters of the Servian hemp industry. Pop. 13,707.

Lesghians (les'gi-ans), a Tartar people of the Mohammedan religion, inhabiting the eastern Caucasus, and forming the chief portion of the inhabitants of Daghestan. They were among the most stubborn of the Caucasian peoples in their resistance to the Russians.

Lesina (les'ē-nä), or LESSINA, an island in the Adriatic, on the coast of Dalmatia, consisting of a long and narrow strip, stretching east to west for 40 miles, with a breadth of 2 to 6 miles, and presenting a continuous chain of hills, which, on the coast, form lofty and precipitous cliffs. Wine, olive-oil and fruit are produced. The principal town, bearing same name, is on the southwest coast, and has a good natural harbor. Pop. 18,091.

Lesley, JOHN, Scottish prelate and historian, born 1527. He was devoted to the cause of Mary, Queen of Scots, and was her chief legal adviser in the negotiations with Queen Elizabeth. For his intrigues he was imprisoned for a time in the Tower of London, being liberated in 1573. He wrote *A Defence of the Honour of Marie, Queene of Scotland, De origine moribus et rebus gestis Scotorum*, etc. He died in 1596.

Lesley (les'lē), J. PETER, geologist, born at Philadelphia in 1819; died in 1903. He was engaged for several years on the geological survey of Pennsylvania, in 1873 was appointed professor of geology at the University of Pennsylvania, and in 1874 was put in charge of the State Geological Survey, which he conducted with much ability. He wrote *A Manual of Coal, Man's Origin and Destiny*, etc.

Leslie (les'le), ALEXANDER, Earl of Leven, a Scottish general, born about the end of the 16th century. He went abroad, and rose to be field-marshal in the service of Gustavus Adolphus. Returning home in 1639 he was chosen general-in-chief of the Covenanters' army, and defeated the king's army at Newburn. In 1644 he went to the assistance of the English Parliament, and led a division at Marston Moor. In 1646 Charles I gave himself up to Leslie's army, then encamped at Newark. At the battle of Dunbar he served as a volunteer, and was soon afterwards thrown into the Tower by Cromwell, but soon liberated at the intercession of Christina of Sweden. He died at an advanced age in 1661

Leslie, CHARLES ROBERT, painter, born in London in 1794, was when very young taken by his parents to the United States, where he was apprenticed to a bookseller in Philadelphia. Having

shown artistic ability, he was sent to England, and became a pupil at the Royal Academy about 1813. Among his most successful early pictures were *Anne Page and Slender* (1819); *Sir Roger de Coverley going to Church* (1820); and *Maydey in the reign of Queen Elizabeth*. In 1824 he produced *Sancho Panza and the Duchess*, the first of his pictures from *Don Quixote*—a work which furnished him with some of his happiest subjects. He painted other scenes from the *Spectator*, from *Tristram Shandy*, and from other popular novels, and a number of historical incidents. He was elected an associate of the Academy in 1821, an academician in 1826. From 1848 to 1851 he was professor of painting at the Academy. He died in 1859. Leslie is distinguished for the delineation of character and expression, and for excellence in composition rather than for his coloring.

Leslie, David, Lord Newark, a Scottish general and Presbyterian leader, born in Fifeshire in the early part of the seventeenth century. He served for some time under Gustavus Adolphus, king of Sweden, but returned to Scotland about the commencement of the civil wars, and in 1644 accompanied the Earl of Leven with the Scottish force sent to assist the parliament. His Scottish horse supported Cromwell's decisive charge at Marston Moor. Leslie was then recalled to check the successes of Montrose in the north, and routed him at Philiphaugh, near Selkirk. With the change in Scottish politics the Scottish army returned home, and Leslie was employed for some time in putting down insurrection, chiefly in the north and west among the Highlanders. When, however, the Scottish Parliament took up arms on behalf of Charles II, Leslie was appointed commander-in-chief, and proved himself no unworthy opponent of Cromwell, but was finally defeated at Dunbar in 1650. He afterwards retreated to Stirling, where he was joined by Charles II, who assumed the command of the army. After the battle of Worcester Leslie was captured in Yorkshire, and imprisoned in the Tower till the restoration. In 1661 he was rewarded for his services to the royal cause with the title of Lord Newark, and a pension of £500. He died in 1682.

Leslie, Eliza, an American prose writer, sister of Charles Robert mentioned above, was born at Philadelphia in 1787; died in 1858. She wrote sketches, the humor and satire of which gave them great popularity. Her novels include *Atlantic Tales*, *Rival Sketches*, etc.

Leslie, John, Bishop of Ross, prelate and diplomatist, born in Scotland in 1526 or 1527, studied at Aberdeen, Toulouse, Poitiers and Paris. He escorted Queen Mary from France in 1561, and was always one of her most active friends. For his intrigues on her behalf he was imprisoned in the Tower, and on his liberation went to France, where in 1598 he was made Bishop of Coutances. He died in a monastery near Brussels in 1596. His works include a work *De Origine, Moribus, et Rebus Gestis Scotorum* (1578); and a *History of Scotland* from 1436 to 1561.

Leslie, Sir John, a Scottish physicist and mathematician, born at Largo, Fife, in 1766. He studied at the University of St. Andrews, and then at Edinburgh. After a short stay in America he returned to London, where he commenced his translation of Buffon's *Natural History of Birds*, published in 1793. He invented the differential thermometer about the year 1800, and four years later published his *Essay on the Nature and Propagation of Heat*. In 1805 he was elected to the chair of mathematics in the University of Edinburgh, a post which in 1819 he exchanged for the professorship of natural philosophy. Through one of his contrivances, his hygrometer, he arrived in 1810 at the discovery of a process of artificial congelation, which enabled him to freeze mercury. In 1809 he published his *Elements of Geometry*; in 1813 an *Account of Experiments and Instruments depending on the Relation of Air to Heat and Moisture*; in 1817 his *Philosophy of Arithmetic*; in 1821 his *Geometrical Analysis and Geometry of Curve Lines*; in 1822 a volume of *Elements of Natural Philosophy*; and in 1828 his *Rudiments of Geometry*. Besides these works he contributed largely to the *Edinburgh Review*, the *Encyclopædia Britannica*, etc. He died in 1832, having been knighted not long before.

Lesseps (lā-sep), Ferdinand, Vicomte de, a French diplomatist and engineer, born in 1805. After holding several consular and diplomatic posts he retired from the government service, and in 1854 went to Egypt, and proposed to the viceroy the cutting of a canal across the Isthmus of Suez. This great work was successfully completed in 1859-69, under his supervision, and brought him high honors. Another grand scheme undertaken by him was the unfortunate Panama canal (which see), in the management of the construction of which his reputation suffered sadly. He was accused of breach of trust and sentenced to a fine and five years' imprison-

ment, but was too ill to be taken from his house, where he died in 1894.

Lessing (les'ing), GOTTHOLD EPHRAIM, a German critic, dramatist and scholar, born in 1729 at Kamentz, in Upper Lusatia. He entered the University of Leipzig in 1746 to study theology, but his love of the drama and his intimacy with Schlegel, Mylius, Weisse, and other young men of literary tastes led him to abandon this intention. He undertook, with Mylius, in 1750, a publication entitled *Beiträge zur Historie und Aufnahme des Theaters* ('Contributions to the History and Improvement of the Theater'); published some poems under the title of *Kleinigkeiten* ('Trifles'); translated a work of the Spanish philosopher Huarte; and wrote some articles in *Voss's Gazette*. He entered at this time into friendly relations with Moses Mendelssohn and the bookseller Nicolai, in conjunction with whom he established the critical journal, *Briefe die neueste Literatur betreffend* ('Letters on the Newest Literature'). In 1755 appeared *Miss Sara Sampson*, a tragedy dealing with English life. In 1760 Lessing became secretary to General Tauenzien in Breslau for five years, when he returned to Berlin and published the *Laokoon oder über die Grenzen der Malerei und Poesie* ('Laocoon, or on the Limits of Painting and Poetry'), and his comedy *Minna von Barnhelm*. About 1767 he became director of the National Theater at Hamburg. While here he wrote his *Dramaturgie*. His criticisms made him enemies, and having been compelled to quit Hamburg, the Duke of Brunswick appointed him his librarian at Wolfenbüttel. In 1775 he went to Vienna and accompanied Prince Leopold of Brunswick to Italy. He married in 1776, but his wife died in little more than a year. At this period he was involved in fierce theological disputes, which his philosophical drama *Nathan der Weise* (1779) did nothing to allay. Besides those mentioned, he wrote another drama, *Emilia Galotti* (1772). He died at Brunswick in 1781.

Lestrange (les-trānj'), SIR ROGER, political controversialist, journalist and translator, born at Hunstanton Hall, Norfolk, in 1616. In 1629 he attended Charles I in his expedition into Scotland. In 1644 he formed a plan for surprising Lynn, but was seized and condemned as a spy. He was, however, respited from time to time until he had lain in prison four years, when he made his escape to the continent. In 1653 he returned to England. He was licenser of the press from the restoration until the close of the reign of James II, and himself edited the *Public Intelligencer* in 1663, the *London Gazette* in 1665, and the *Observator* in 1679, the latter existing till 1687. He died in 1704. He was the author of a great number of coarse and virulent political tracts, and translated Josephus, Cicero's *Offices*, Seneca's *Morals*, Quevedo's *Visions*, etc.

Lestris (les'tris), the genus of birds to which belong the Arctic gull and the skua gull, the most formidable of all the gull kind.

Lesueur (lē-sū-eur), EUSTACHE, a French painter, born in 1617; studied under Simon Vouet. He married in 1644, and was compelled for a living to execute vignettes and frontispieces for books. His first works are in the style of his master, and quite distinct from his subsequent ones. His great work was the series of paintings which he executed for the Carthusian monastery in Paris in 1645-48, delineating in twenty-two pictures the principal scenes in the life of St. Bruno. In 1650 he painted for the corporation of goldsmiths the *Preaching of the Apostle Paul at Ephesus*. All of these are large paintings, and are now in the Louvre. Among the most distinguished of his later works are some mythological scenes. He died in 1655. His works are distinguished for grace rather than power, and are inferior in respect of color.

Lesueur, JEAN FRANÇOIS, a French musical composer, a descendant of the painter Lesueur; born in 1760. In 1786 he was appointed chapel-master at Nôtre Dame, but his first opera proving successful, he resigned this post, and for some time devoted himself to operatic work. His chief operas were *La Caverne* (1792), *Paul et Virginie* (1794), *Télémaque* (1796). *Les Bardes* (1804), and *La Mort d'Adam* (1809). He was made professor of music in the National Institute, and though afterwards displaced by intrigue, was again restored by Bonaparte. In 1814 he was appointed composer to the king; and in 1817 professor of composition to the Conservatoire. His sacred music consists of thirty-three masses, oratorios and motets. He died in 1837.

Lethargy (leth'ar-ji), an unnatural tendency to sleep, closely connected with languor and debility, and much resembling apoplexy in character. It may arise from a plethoric habit, from deficient circulation in the brain, from nervous exhaustion of that organ, from a poisoned state of the blood, or from a suppression of urine. When it is the consequence of alcoholic intoxication or of

the action of narcotics it should be treated by stimulants, the application of heat, etc.

Lethbridge, a town of Alberta, Canada, about 120 miles south of Calgary, in a farming and coal-mining region. Pop. 11,000.

Lethe (lē'thē; Greek, *lēthē*, forgetfulness), the River of Oblivion, one of the streams of the lower regions celebrated in ancient mythology, whose water had the power of making those who drank of it forget the whole of their former existence. Souls before passing into Elysium drank to forget their earthly sorrows; souls returning to the upper world drank to forget the pleasures of Elysium.

Lethington. See *Maitland, William.*

Leto. See *Latona.*

Letter of Attorney. See *Attorney.*

Letter of Credit. See *Credit.*

Letter of Marque. See *Marque.*

Letters. See *Alphabet, Consonant, Vowel, Writing,* etc.

Letters-patent, the name of an instrument, not sealed, granted by the government, conferring on a person or a public company special or peculiar privilege. Letters-patent are issued to protect new inventions, and from this is derived what is called patent-right. See *Patent.*

Letts (lets), a Slavonic people closely akin to the Lithuanians inhabit-in Courland, Livonia, Vitebsk and Kovno. Their language, along with the Lithuanian and Old Prussian (extinct), forms the Lettic or Lithuanian branch of the Indo-European family of tongues. The Letts number about 1,500,000.

Lettuce (let'is; *Lactūca sativa*), a smooth, herbaceous, annual plant, containing a milky juice, and in general use as a salad. The stem grows to the height of about 2 feet, and bears small, pale-yellow flowers; the inferior leaves are sessile, and undulate on the margin. The young plant only is eaten, as the lettuce is narcotic and poisonous when in flower. A number of species are known from various parts of the globe. *Lactucarium,* or lettuce opium, the inspissated juice of the lettuce, is used medicinally as an anodyne.

Lettuce-bird, the American goldfinch (*Spirus tristis*). It is a bird of the gardens and orchards and one of the most widely distributed of the smaller seed-eating American birds. It nests in the village shrubbery and has a short but very sweet song, uttered while in flight.

Leucadia (lū-kā'di-a), or SANTA MAURA, one of the Ionian Islands, on the west coast of Greece, 18 to 20 miles long, and 7½ to 10 miles wide. Its surface is mountainous and rugged. The eastern side is waste and barren, but the western and northern parts are very productive, yielding vines, olives, citrons, etc. The southwestern extremity, now Cape Ducato (also known as the Leucadian Rock, or the Lover's Leap), is a white cliff rising to the height of at least 2000 feet. On its summit was a temple of Apollo, in whose honor a criminal was annually thrown from the rock into the sea as a sin-offering. Sappho, Artemisia, and other despairing lovers are said to have thrown themselves from it. Amaxichi is the chief town. Pop. of the island, 31,769.

Leuchtenberg (loiĥ'ten-berĥ), in the middle ages an independent landgraviate of Germany, which, by the extinction of the male line, fell to Bavaria in 1646. From it Eugène Beauharnais took the title of Duke of Leuchtenberg.

Leucippus (lū-sip'us), a Greek philosopher, founder of the atomic school, lived 500 years B.C., and is said by some to have been a native of Abdera; by others, of Elis or the Island of Melos. His instructor was Zeno the Eleatic, or, according to others, Parmenides, and he himself was the teacher of Democritus.

Leuciscus (lū-sis'kus), the genus of fishes which contains the roach, dace and bleak.

Leucocythæmia (lū-co-si-thē'mi-a), LEUCOCYTHEMIA, in medicine, a disease in which the blood presents a great increase of the white corpuscles, the spleen and lymphatic glands being at the same time enlarged.

Leucojum (lū-ko'jum), LEUCOIUM, a genus of bulbous plants, nat. order Amaryllidaceæ. They are very like snowdrops, but the six perianth-segments are nearly equal. No varieties have been developed from this favorite plant by cultivation.

Leucoma (lū-ko'ma), a white opacity of the cornea of the eye, the result of acute inflammation. Called also *Albugo.*

Leucopathy. See *Albinos.*

Leucorrhœa (lū-ko-rē'a), in medicine, a pathological discharge of a catarrhal, white, yellowish, or greenish mucus from the female genital

organs, due to acute or chronic inflammation, which may be infectious in character. It is treated by antiseptic and astringent douches, paying particular attention to any local condition found present and to the general health of the afflicted person.

Leuctra (lūk'trȧ), a village in Bœotia, on the road from Thespiæ to Platæa, famous for the victory of the Theban Epaminondas over the Spartan king Cleombrotus, which put an end to Spartan domination in Greece (371 B.C.).

Leuk (loik), a town of Switzerland, canton of Valais, on the right bank of the Rhone, 15 miles E. N. E. of Sion. About 5 miles to the north the celebrated thermal saline baths of Leuk (Leukerbad).

Leutze (loit'seh), EMANUEL, artist, was born in 1816 in Würtemberg, Germany; died in Washington, D. C., in 1868. He was a pupil of Leslie. Among his best known paintings are: *Columbus Before the Council of Salamanca, Columbus Before the Queen, The Landing of the Norsemen in America, Cromwell and his Daughter, Washington Crossing the Delaware, News From Lexington* and *Westward the Star of Empire Takes its Way;* the latter in the Washington capitol.

Levaillant (lē-vā-yän), FRANÇOIS, a French traveler, born in 1753. He made two expeditions into the interior of Africa, his accounts of which were published in 1790 and 1796. He died in 1824.

Levant (lē-vant'), a term applied in the widest sense to all the regions eastward from Italy as far as the Euphrates and the Nile, and in a more contracted sense to the Asiatic coasts of the Mediterranean and the adjacent countries from Constantinople to Alexandria in Egypt.

Leva'ri-facias (le-vär'ī fā'shi-as), a writ of execution issued at common law.

Levee (lev'ē), a morning reception held by a prince or great personage. The term is chiefly applied in Britain to the stated public occasions on which the sovereign receives visits from such persons as are entitled by rank or fortune to the honor. In the United States the term *levee* is applied to an official reception, at any hour of the day or evening.

Levee (Fr. *levée*), in America, an embankment on the margin of a river, to confine it within its natural channel, such as may be seen extending for long distances along the banks of the lower Mississippi.

Level (lev-el), an instrument by which to find or draw a straight line parallel to the plane of the horizon, and by this means to determine the true level or the difference of ascent or descent between several places, for various purposes in architecture, agriculture, engineering, hydraulics, surveying, etc. There is a great variety of instruments for this purpose, differently constructed and of different materials, according to the particular purposes to which they are applied, as the carpenter's level, mason's level, gunner's level, balance level, water level, mercurial level, spirit level, surveying level, etc. All such instruments, however, may be reduced to three classes:—(1) Those in which the vertical line is determined by a suspended plumb line or balance weight, and the horizontal indicated by a line perpendicular to it. Such are the carpenter's and mason's levels. (2) Those which determine a horizontal line by the surface of a fluid at rest, as water and mercurial levels. (3) Those which point out the direction of a horizontal line by a bubble of air floating in a fluid contained in a glass tube. Such are spirit-levels, which are by far the most convenient and accurate. All levels depend on the same principle, namely, the action of terrestrial gravity.

Levelers (lev'el-ërs), a name more particularly given to a party which arose in the army of the Long Parliament about the year 1647, and was put down by Fairfax. They aimed at the establishment of an equality in titles and estates throughout the kingdom.

Leveling (lev'el-ing), the art or operation of ascertaining the different elevations of objects on the surface of the earth, or of finding how much any assigned point included in a survey is higher or lower than another assigned point. It is a branch of surveying of great importance in making roads, determining the proper lines for railways, conducting water, draining low grounds, rendering rivers navigable, forming canals, and the like. In ordinary cases of leveling (for example, for canals, railways, etc.) the instruments commonly employed are a spirit-level with a telescope attached to it, and a stand for mounting them on, and a pair of leveling staves. A *leveling staff* is an instrument used in connection with a spirit-level and telescope. It is variously constructed, but consists essentially of a graduated pole with a *vane* sliding upon it so as to mark the height at any particular distance above the ground. In leveling two of them are used together, and being set up

at any required distance the surveyor, by means of a telescope placed between them perfectly horizontally, is enabled to compare the relative heights of the two places.

Leven (lē'ven), Loch, a lake of Scotland, about 10 miles in circumference, in the county of Kinross. It contains four islands, on one of which was formerly a priory, and on another stand the remains of the castle of Loch Leven, once a royal residence, granted by Robert III to a Douglas. Mary Queen of Scots was confined in this castle after her capture by the confederate lords in 1567, but succeeded in escaping by the aid of George Douglas, her keeper's brother, on May 2, 1568.

Lever (lē'ver), a bar of metal, wood, or other substance turning on a support called the *fulcrum* or *prop*, and used to overcome a certain resistance (called the *weight*) encountered at one part of the bar by means of a force (called the *power*) applied at another part. It is one of the mechanical powers, and is of three kinds, viz. (1) When the fulcrum is between the weight and the power, as in the handspike, crowbar, etc. In this case the parts of the lever on each side of the fulcrum are called the arms, and these arms may either be equal, as in the balance, or unequal as in the steelyard. (2) When the weight is between the power and the fulcrum, as in rowing a boat, where the fulcrum is the water. (3) When the power is between the weight and the fulcrum, as in raising a ladder from the ground by applying the hands to one of the lower rounds, the fulcrum in this case being the foot of the ladder. The law which holds in the lever is: the power multiplied by its arm is equal to the weight multiplied by its arm. It is evident that when the power has a very large arm, and the weight a very small one, a very small power will overcome a great resistance. In the lever, as in all machines when a small force overcomes a great one, the small force acts through a much greater distance than that through which the great force is overcome, or as is sometimes said, 'What is gained in power is lost in time.'

Lever, Charles James, an Irish novelist, born at Dublin in 1806. He was graduated in arts at Trinity College, Dublin, in 1827, and in medicine in 1831, also taking a doctor's degree a little latter at Göttingen. He then returned to Ireland to practise. In March, 1834, he contributed his first paper to the newly-started *Dublin University Magazine*, of which he became editor in 1842. The first chapter of *Harry Lorrequer* appeared in that magazine in 1837. Meanwhile he was attached as physician to the British legation at Brussels, where he practised for three years. During his three years' editorship of the *Dublin University Magazine* he resided in the neighborhood of the Irish capital, but after his resignation he took up residence on the continent, mainly occupying himself with fiction. His *Charles O'Malley*, *Tom Burke*, *Jack Hinton*, etc., constituted a literature entirely *sui generis*. His later novels were more thoughtful and artistic. He obtained a diplomatic post at Florence about 1845, was appointed vice-consul at Spezzia in 1858, and in 1867 at Trieste, where he died in 1872.

Leverrier (le-vā-ri-ā), Urbain Jean Joseph, a French astronomer, born at Saint-Lô (Manche) in 1811; died at Paris in 1877. He devoted himself at first to chemical research, but some memoirs on the stability of the solar system drew on him the attention of Arago, who induced him to persevere with astronomical studies. His observations on the transit of Mercury in 1845 procured him admission into the Academy of Sciences. His great work was his investigation of the irregularities in the movements of the planet Uranus, carried on simultaneously but independently with those in the same line by John Couch Adams, which led to the discovery of the planet Neptune. He entered political life in 1849, and was made a senator by Napoleon III. He succeeded Arago as director of the observatory, but his arrogance and violence of temper made his tenure of the office a failure. His tables of suns and planets are in general use among astronomers.

Levi (lē'vī), the third son of Jacob and Leah. The chief incident recorded of him, as apart from his brethren, is the part which he played in the massacre of the Shechemites. Three sons went down with him to Egypt—Gershon, Kohath and Merari (Gen., xlvi, 2). Moses and Aaron were of this tribe.

Leviathan (le-vī'a-thun), a form of the Hebrew word *livyathan*, meaning a long-jointed monster, applied in Job, xli, and elsewhere in Scripture to an aquatic animal, variously held to be the crocodile, the whale, or some species of serpent.

Levirate (lev'er-āt), Lev'iration (Lat. *levir*, a husband's brother), the custom among the Jews of a man's marrying the widow of a brother who died without issue. The same custom or law prevails in some parts of India.

Levis (lev'is), a town of Canada, on the south bank of the St. Lawrence opposite Quebec with which there is ferry communication. It carries on a large trade by river and rail. Pop. 7452.

Levites (lē'vīts), the name generally employed to designate not the whole Jewish tribe that traced its descent from Levi, but a division within the tribe itself, in contradistinction to the priests, who are otherwise called the 'sons of Aaron.' They were the ministers of worship, specially singled out for the service of the sanctuary. Together with the priests they formed the sacerdotal tribe. A permanent organization was made for their maintenance. In place of territorial possessions they were to receive tithes of the produce of the land, and in their turn to offer a tithe to the priests. After the settlement in Canaan, to the tribe of Levi were assigned forty-eight cities, six of which were cities of refuge, thirteen of the total number being set apart for the priests. To the Levites was to belong the office of preserving, transcribing and interpreting the law, and they were to read it every seventh year at the feast of tabernacles. Their position was much changed by the revolt of the ten tribes, and they are seldom mentioned in the New Testament, where they appear as the types of formal, heartless worship.

Leviticus (le-vit'i-kus), the name of the third book of the Pentateuch, so called from the first word of its contents. By the later Jews it was called the 'Law of the Priests,' and sometimes the 'Law of Offerings.' It consists of seven principal sections, but it may be generally described as containing the laws and ordinances relating to Levites, priests and sacrifices. The integrity of the book is very generally admitted, the Elohist, or author of the original document (see *Elohim*), being credited with having written nearly the whole of it, and the rest being considered originally Elohistic.

Levkosi'a. See *Nicosia*.

Levoglucose (lev-o-glū'kōs), LÆVOGLUCOSE, a sugar isomeric with dextroglucose, but distinguished from it by turning the plane of polarization to the left, and always occurring along with it in honey, in many fruits, and in other saccharifferous vegetable organs.

Levy (lev'i), the compulsory raising of a body of troops for purposes of general defense or offense when the existing troops are insufficient to meet the exigencies of the situation. When a country is in danger of instant invasion a *levée en masse* is sometimes made, every man capable of bearing arms being called out. If the occasion be less urgent the levy may be restricted to men of a fixed class, as between 18 and 40 years of age.

Lewes (lū'es), a municipal borough of England, in Sussex, on the Ouse, 7 miles northeast by east of Brighton. It is built on an acclivity, and is a place of great antiquity, containing the ruins of many ecclesiastical buildings. The chief manufacture is agricultural implements. In its vicinity, in 1264, the barons, under Simon de Montfort, defeated the royal army under Henry III. Pop. (1911) 10,972.

Lewes (lū'es), GEORGE HENRY, philosophical writer and contributor to most departments of literature, born in London in 1817. He was in turn a clerk, a medical student, and a student of philosophy in Germany, from which he returned in 1840 to devote himself to general literature. His first important work was his *Biographical History of Philosophy from Thales to Comte*, originally published in 1845, and subsequently much extended and altered—a work written more or less from a Positivist point of view, and sufficiently proving his ability as a thinker and writer. From 1849 to 1854 he was literary editor of the *Leader*, during that time publishing his *Life of Robespierre* (1850) and a compendium of Comte's *Philosophy of the Sciences* (1853). His *Life of Goethe*, which won him a European reputation, was published in 1855. From 1854 he was largely engaged in physiological investigations with special reference to philosophical problems. To this period belong his *Seaside Studies* (1858), *Physiology of Common Life* (1860), and *Studies in Animal Life* (1861), besides papers contributed to the British Association on the spinal cord and on the nervous system. In 1864 he published a study on Aristotle, and in 1865 founded the *Fortnightly Review*, but was compelled by ill health to retire a year later. The chief work of his life, aiming at the systematic development of his philosophical views, is entitled *Problems of Life and Mind* (1873-77). He died in 1878. Besides the works already mentioned he wrote the Spanish drama, *Lope de Vega and Calderon* (1846); two novels, *Ranthorpe* (1847) and *Rose, Blanche and Violet* (1848); and prepared various plays for the stage under the pseudonym of *Slingsby Lawrence*. See *Eliot, George*.

Lewis and Clark Expedition. When he had completed the Louisiana

Purchase in 1803, adding a vast western region to the territory of the United States, President Jefferson resolved to carry out a project he had proposed while yet in Washington's cabinet, namely, to have the far northwest explored. For leader of this expedition he chose Merriwether Lewis, one of his secretaries, and the latter selected Captain William Clark, brother of the celebrated Revolutionary soldier, George Rogers Clark, as his associate. Taking with them about forty men, they began their journey from the mouth of the Missouri in the spring of 1804. They followed that river until October, and wintered near the site of Bismarck, North Dakota. In May, 1805, they had a first view of the Rockies. After a journey full of hardship they reached the Columbia River, discovered by Captain Grey fourteen years before and named after his vessel, and floated down its stream. On the morning of November 7, 1806, they caught their first glimpse of the Pacific Ocean. They spent the winter on the coast, and then returned, reaching St. Louis in September, 1807. They were the first to discover various Indian tribes and the great expanse of the western territory. Their exploit was commemorated by a grand exposition at Portland, Oregon, in 1905.

Lewis (lū-is), Sir George Cornewall, an English statesman and historian, born in 1806; died in 1863. After serving in government positions, and sitting in parliament 1847-52, he became in 1852 editor of the *Edinburgh Review*. In 1855 he succeeded his father in the representation of Radnorshire, and was immediately appointed chancellor of the exchequer by Lord Palmerston. In 1859 he became secretary of state for the home department, and secretary of state for war in 1861. His chief works were: *Remarks on the Use and Abuse of Some Political Terms* (1832); *Essay on the Origin and Formation of the Romance Languages* (1835); *Essay on the Influence of Authority in Matters of Opinion* (1850); *Inquiry into the Credibility of Early Roman History* (1855); *Astronomy of the Ancients* (1861), and *A Treatise on the Methods of Observation and Reasoning in Politics*.

Lewis, Matthew Gregory, an English romance writer and dramatic author, born in 1775. He was educated at Westminster, and then traveled for some time in Germany, the romantic literature of which gave to him that passion for the marvelous and terrific which chiefly marks his writings. His earliest and most celebrated work was *Ambrosio, or The Monk* (1794), a romance, the first edition of which was suppressed for its licentiousness. Other works were: *Feudal Tyrants*, a romance; *Romantic Tales; Tales of Wonder*, in verse; *Tales of Terror; The Castle Specter*, a romantic drama, 1798; *Adelmorn, the Outlaw*, 1800; *Alphonso, King of Castile*, 1801; a volume of miscellaneous poetry; the *Bravo of Venice* (a romance translated from the German, 1804), and *Timour, the Tartar*, a melodrama (1812). Mr. Lewis had for some years a seat in Parliament. He died at sea in 1818, while on the voyage home from a visit to his West Indian possessions.

Lewis, Merriwether, explorer, born in Virginia in 1770; died by suicide, during a fit of temporary insanity, in 1809. For his famous exploit see *Lewis and Clark Expedition*.

Lewis River, or Snake River, a river of North America, which rises in the Rocky Mountains, and runs northwest into the Columbia, 413 miles from its mouth; length, about 900 miles. Its course lies partly in Idaho, partly between Idaho and Oregon, and partly in Washington.

Lewiston, a city, capital of Nez Perce County, Idaho, on Snake River, at the head of navigation. Center and outlet for great agricultural, stock-raising, lumbering and mining district. Pop. 6043.

Lewiston, a city of Maine, on the Androscoggin River, which here has a fall of 50 feet, the water power being utilized by several manufactories (chiefly of cotton goods). There are sawmills, bleaching and dye works and manufactures of shirts, shoes, brooms, and beds, etc. Pop. 30,308.

Lewistown, a borough, capital of Mifflin County, Pennsylvania, on the Juniata River, 61 miles N. W. of Harrisburg. It has steel works, iron mills, axe factories, silk and knitting mills, etc. Pop. 9472.

Lexicon. See *Dictionary*.

Lexington (leks'ing-tun), a city of Kentucky, 23 miles E. S. E. of Frankfort. It is the oldest town in the State (having been founded in 1775), and was once the capital. It has extensive manufactures of beer and spirits, flour, soap, etc.; is the center of the 'Blue Grass country,' and has a large trade in grain and live stock. There is here the Kentucky State University. Pop. 35,099.

Lexington, a town of Massachusetts, 11 miles N. W. of Boston, where the first American blood was shed in armed resistance to the mother coun-

try. On April 19, 1775, the advance of a detachment of British troops, sent from Boston to seize some provincial stores at Concord, was opposed by the Lexington militia (70 men), who were dispersed with a loss of eight killed and three wounded. A monument has been erected to the memory of those who fell in that action. Pop. 4918.

Lexington, a city, county seat of Lafayette County, Missouri, on the Missouri River, 42 miles E. of Kansas City. It is in a rich agricultural region, with large coal mining interests, brick-yards, etc. Pop. 5242.

Ley. See *Lye.*

Leyden (lī'den; Lat. *Lugdunum Batavorum*), a town of Holland, 22 miles southwest of Amsterdam, on both sides of the Old Rhine. Leyden is encompassed by windmills, and surrounded by country seats, pleasure grounds, gardens and fertile meadows. The streets are straight and broad, the Broad Street (*Breede-straat*) being esteemed one of the finest in Europe. In it is situated the town hall (*Stadhuis*), a picturesque old building, with some important paintings. None of the churches are very remarkable. The most important educational institution is the university, formerly one of the most famed in Europe. It is attended on the average by about 700 students, nearly one-half studying law. Leyden has cloth and other manufactures. A memorable event in its history was its siege by the Spaniards in 1573-74, and its relief by the Prince of Orange, who opened a dike and flooded the Spanish camp. The pop. about 100,000 in the seventeenth century, is now 59,207.

Leyden, JAN, or JOHN OF. See article *Anabaptists.*

Leyden, JOHN, a Scottish poet and orientalist, born at Denholm, Roxburghshire, in 1775; died at Batavia in 1811. Being intended for the Scottish church, he was sent to the University of Edinburgh in 1790. Here his studies included not only theology and the learned languages, but also French, Spanish, Italian, German, Icelandic, Arabic and Persian. He published translations and original poems in the *Edinburgh Magazine;* contributed to Lewis' *Tales of Wonder;* assisted Sir Walter Scott in procuring materials for his *Minstrelsy of the Scottish Border,* and wrote a *History of African Discoveries.* In 1798 he was ordained a Presbyterian minister, but the ministry not being to his taste, he accepted service as assistant-surgeon under the East India Company, a post demanding a surgical degree, which he obtained after six months' study. In India he continued his favorite philological studies, became professor of Hindustani at Bengal College, and shortly after a judge at Calcutta; but fell a victim to climate and overstudy, and died of fever during an expedition to Java with Lord Minto.

Leyden, LUKE OF. See *Luke of Leyden.*

Leyden Jar, an early form of electric accumulator, introduced to the scientific world by Muschenbroek of Leyden in 1746; hence its name. It consists of a glass vial or jar coated inside and outside, usually with tin-foil, to within a third of the top. A metallic rod, having a knob at the top, is fixed into the mouth of the jar, and is made to communicate with the inside coating, and when the jar is to be charged the knob of this rod is applied to the prime conductor of an electric machine. As the electric fluid passes to the inside of the jar an equal quantity passes from the outside, so that the two coatings are brought into opposite states, the inside being positive and the outside negative. The jar is discharged by establishing a communication between the outside coating and the knob. When a number of jars are placed in a box lined with tin-foil connected with the earth, their knobs being joined together, they form a *battery;* a quantity of electricity equal to the sum of the charges which would be received by each jar can be collected in such a battery, capable of melting fine metallic wires, puncturing plates of glass or cardboard, killing animals, rupturing bad conductors, etc.

Leyden-jar.

Lhassa. See *Lassa.*

L'Hôpital (lō-pi-tal), MICHEL DE, an eminent French chancellor and author; born about 1504; died in 1573. Admitted to the bar in Paris, he rapidly rose in his profession until he became superintendent of the royal finances in 1554, a position in which his services were of the highest value. In 1560 he was appointed to the chancellorship of France. The country suffered severely at this time from the struggles between Catholics and Protestants. L'Hôpital rendered great service in mediating between the rival factions, and was the principal author of the Edict of Toler-

ance of 1562. When violence was resolved on for the extermination of the reformed religion, he found it necessary to resign. The atrocities of St. Bartholomew's day in 1572 were a great shock to him, and he only survived that event by a few months.

Li, Le, or Cash, the only copper coin of China, with a square hole in the middle, and an inscription on one side. Ten lis make one candareen, 100 a mace, 1000 a liang or tael, the only Chinese silver coin, of varying value, averaging a little over a dollar. Li is also a Chinese measure of length equal to about ⅓ of an English mile.

Liability, Limited. See *Joint-stock Companies.*

Lia-fail, or Stone of Destiny, a broad gray stone on which the kings of Scotland were crowned in the Abbey Church of Scone. In 1296 Edward I carried it to England, and it still remains under the coronation chair in Westminster Abbey. Tradition has it that it is the very stone upon which the patriarch Jacob laid his head in the plains of Luz.

Lianas (lē-an'az), a term applied to those climbing and twining plants found in profusion in tropical climates, where in many instances they overtop the heads of the tallest trees, and intertwine the entire forest by their cable-like shoots, forming an impenetrable network, which it is necessary to break through with the hatchet. Vanilla, sarsaparilla, and other medicinal plants are true lianas.

Liaotung (lē-'ou-tōng), a region of Manchuria, stretching into the Yellow Sea between the gulfs Liaotung and Corea. Port Arthur is situated at the extremity of the peninsula thus formed. It forms the greater part of the province of Shing-King. It was an important seat of the Russo-Japanese war.

Lias (lī'as), in geology, the name given to that series of strata, consisting principally of thin layers of limestone embedded in thick masses of blue, argillaceous clay, lying at the base of the Oolitic or Jurassic series, and above the Triassic or New Red Sandstone. The formation is highly fossiliferous, ammonites being found in such quantities and varieties as to be called into use in the classification of the different beds. Gryphites and belemnites are also very common molluscs. Fish remains are frequent; but of all its fossil remains by far the most important are those of the great reptiles, of which the ichthyosaurus, plesiosaurus and enaliosaurus are representatives. Numerous remains of plants occur in the lias. See *Geology.*

Libanius (lī-bā'ni-us), a distinguished Greek sophist and rhetorician, born at Antioch about A.D. 314; died at the same place about 395. He studied at Athens, and taught with great success at Constantinople and at Nicomedia. He used his eloquence in obstructing the spread of Christian ideas, and in the defense of paganism. St. Basil and St. Chrysostom were warmly attached to him. His letters have, besides great literary merit, much historical value, as they were addressed to the most eminent men of his time.

Lib'anus, Mount. See *Lebanon.*

Libau (lē'bou), an important seaport of Russia, government of Courland, at the mouth of the lake of the same name, on the Baltic. It has an artificial harbor, which has been recently much improved, and has gained importance as a seaport. Its trade in corn, flax, hemp, etc., is considerable. Pop. (1913) 90,400.

Libel (lī'bel), in law, the act of publishing malicious statements with intent to expose persons or institutions to public hatred, contempt, or ridicule, and thereby provoking them to anger, causing a breach of the peace, injury to reputation, business, etc. The difference between libel and slander is, that in the former case the defamation must have been effected in writing, printing, or some other visible manner, while in the latter the offense is committed verbally. Publication is held to have taken place if the libel is seen but by one person other than the person libeled. The law distinguishes defamatory, seditious and obscene libel. A defamatory libel may result in civil and criminal proceedings against both the publisher and the writer, but to come under this category it is essential that the libel be false, malicious (the law presuming malice in every injury done intentionally and without justification), have a tendency to provoke hatred or contempt, and that it be non-privileged. In criminal law it is a misdemeanor to publish or threaten to publish a libel; or as a means of extortion, to offer to abstain from or to prevent others from publishing a libel. In the United States the punishment for this offense is imprisonment fixed by statute in the different States. A seditious libel is one directed against the head of the state, the legislature, the courts of justice, etc., and its publication constitutes also a misdemeanor. The term obscene libel comprises any obscene publication, and the publisher thereof is liable to imprisonment with hard labor. If

the charges contained in the libel are true a civil action cannot be maintained, but the truth of the libelous matter is no defense at common law; at the same time it generally secures the defendant the merciful consideration of the court. In a civil action the plaintiff recovers damages, the amount of which is settled by the jury; upon an indictment, the jury has merely to acquit the defendant or to find him guilty, after which the court passes judgment, and awards punishment, generally fine or imprisonment, or both. Recent legislation and decisions in this branch of law in Great Britain and the United States (the American laws differ but little from those of Great Britain) have a tendency to limit liability for action to purely false, scandalous and malicious libels. Truth, if published with good motives and for justifiable ends, is now admitted as a good defense, and even motive alone, though the statements may prove untrue.

Libel, in nearly all ecclesiastical and admiralty courts, is the name given to the formal written statement of the complainant's ground of complaint, in the civil litigation, against the defendant. In Scotch law, an indictment on which either a civil action or criminal prosecution takes place.

Libel'lula. See *Dragon-fly.*

Liber. See *Bark.*

Liberal Arts. See *Arts.*

Liberal Party (lib'ér-al), in modern politics, the party which claims to be distinctively that of reform and progress. The main objects of liberal agitation and legislation are to vest increased power in the people, and to extend privileges to the masses which were formerly monopolized by the favored classes. Most European countries have a powerful liberal party, and liberalism is rapidly spreading in Europe, particularly in Great Britain, Germany, Italy, Spain, Holland, Norway and Sweden. In Great Britain Liberal and Conservative ministries follow each other at irregular intervals, and on the whole the system works well. In the United States the party of progress, that standing between conservatism and radicalism, has adopted various titles in different states.

Libe'ria, a negro republic on the west coast of Africa, founded in 1820 by liberated American slaves under the auspices of the American Colonization Society, and recognised as an independent state in 1847. It lies between the rivers San Pedro and Manna, has 500 miles of seaboard, and extends some 100 miles inland; area 14,000 to 15,000 square miles. The soil is fertile, well watered, and highly adapted to the cultivation of all tropical products. The chief crop is coffee, increasing quantities of which are grown from year to year and exported, other exports being palm-oil, groundnuts, caoutchouc and ivory. The climate is very unhealthy for Europeans. British weights, measures and moneys are mostly in use. The English language predominates among the governing class, Protestant churches and schools are amply provided, and civilization is making rapid strides among the natives. The population consists of some 60,000 immigrants from the United States and their descendants, and about 2,000,000 natives; Monrovia is the capital. The government of the republic is on the model of the United States. Recently, its territory has been trenched upon by adjoining British and French settlements, and protection has been asked from the United States. In response this country undertook the full charge of the finances, military organization, agriultural methods and boundary questions of Liberia, and made arrangements for a loan to pay off the existing debt and obligations of the country.

Libertines (lib'ér-tinz), or LIBERTI'NI, a sect of fanatics in the sixteenth century in Holland and Brabant, who maintained that nothing is sinful but to those who think it sinful, and that perfect innocence is to live without doubt. They advocated community of goods, etc. The name was also applied in England to the early Anabaptists about the middle of the sixteenth century.

Liberty Bell, the famous bell which has been given the credit of announcing to the people of Philadelphia the signing of the Declaration of Independence on July 4, 1776, and which is now regarded by the people of the United States as the sacred historical emblem of their liberty. It long hung in the dome of the old State House, later known as Independence Hall, in Philadelphia, for which location it was cast in England and brought to that city in 1752. Its purpose was to call the members of the Colonial Assembly of that date to its meetings. While being taken from the ship it met with an accident that spoiled its tone, and it was recast in Philadelphia in 1755. On it was inscribed the Scriptural passage, 'Proclaim liberty throughout all the land unto all the inhabitants thereof,' a phrase highly significant in relation to its later history. The story

that it was rung on the date of the signing of the Declaration of Independence has no historical evidence to sustain it, but there seems no doubt that it was rung on the occasion of reading the Declaration to the people in Independence Square, a few days later. When the British occupied Philadelphia in 1777 the bell was taken down and sunk in the Delaware River near Trenton, but was returned to the State House after their departure. It was subsequently rung on every Fourth of July and on other memorable occasions, until 1835, when it was cracked while being tolled for the burial of Chief Justice Marshall. In 1854 it was placed in the entrance hall of the State House on a pedestal with 13 sides, representing the number of original states. In 1893 it was taken to Chicago for the World's Fair of that date and was greeted with patriotic enthusiasm in all the cities and states through which it passed. Since then it has been exhibited in other cities holding World Fairs, and it is now looked upon by American citizens as their most important and significant historical memorial. Few visitors to Philadelphia fail to see and revere the old bell.

Liberty Cap, or CAP OF LIBERTY, a cap used in ancient times as a symbol of liberty. Roman slaves, when given freedom, were accustomed to put on what was called the Phrygian cap as a token of their liberty. In modern times the name of Cap of Liberty has been given to the red cap worn by the French and other revolutionists.

Liberty Loan, a popular loan instituted by the United States government by Act of Congress, approved April 24, 1917, after the entrance of the great American republic into the European war.

The *First Liberty Loan* was for $2,000,000,000, bearing interest at 3½ per cent, and was offered to the public in May, 1917. There were two types of bonds offered, one being coupon bonds in denominations of $50, $100, $500, and $1000; the other, registered bonds of $100, $500, $1000, $5000, 10,000, $50,000 and $100,000. These were to be free from all taxation except the Federal inheritance taxes, their date of maturing being June 15, 1947. They were made convertible into the bonds of any subsequent issue. Subscriptions amounted to $3,035,226,850.

A *Second Liberty Loan*, for $3,000,000,000, was offered to the public in October, 1917, the interest rate on which was increased to 4 per cent. These bonds also were exempt from all taxes except State inheritance taxes and supertaxes. Total allotment, $3,808,000,000, redeemable after 1927; subscribers, 10,020,000.

Third Liberty Loan: Total allotment, $4,176,000,000, bearing interest at 4¼ per cent, redeemable in 1928; number of subscribers, 17,000,000.

Fourth Liberty Loan: Total allotment, $6,989,047,000, bearing interest at 4¼ per cent, redeemable after 1933; number of subscribers, 21,000,000.

Liberty Party, the title assumed by the first political organization of the Abolitionists of the United States. This title was taken by a national convention of Abolitionists held on April 1, 1840. James G. Birney and Francis I. Lemoyne were its candidates for President and Vice-President, they receiving 7059 votes. Four years later a second convention was held, Birney being again named for President and Thomas Morris, of Ohio, for Vice-President. They received 62,300 votes, a seemingly negligible number, but it had an important effect on the result of the contest of that year between Clay and Polk. It turned the scale in New York and Michigan against Clay, the Whig candidate, and aided in electing Polk, the Southern Democrat. This result was not satisfactory to the Abolitionists, and in the two succeeding Presidential elections they made no nominations, but cast their vote for the Free Soil Party. In 1856 they formed the advance guard of the new Republican party, though not fully endorsing its platform.

Liberty, Statue of, the name given a bronze statue of colossal dimensions, the tallest in the world, which stands on Bedloe or Liberty Island, in New York Harbor. The French sculptor Bartholdi designed and executed it, the citizens of France presenting it to the people of the United States in 1876, the hundredth anniversary of American independence. It was not until 1886, however, that it was completed and placed in its present position, the pedestal on which it stands being built by popular subscription of American citizens. It represents a female figure holding an uplifted torch, indicating 'The Goddess of Liberty enlightening the world.' The pedestal stands 150 feet above the water level, the statue being 111½ feet high and 151 feet including the height of the torch. Forty persons can stand within the head and the interior of the torch holds 12 persons. A permanent lighting system has been installed in the torch, bathing the statue in a soft white light.

Libra (lī'brȧ), the seventh sign of the zodiac.

Library (lī'brȧ-ri), the name given to a collection of books, and to the building in which it is located. Libraries existed in ancient Egypt and Assyria, and Pisistratus is credited with the honor of introducing a public library at Athens about B.C. 537. Cicero and various wealthy Romans made collections of books, and several Roman emperors established libraries, partly with books obtained as spoils of war. By far the most celebrated library of antiquity was the Alexandrian. (See *Alexandrian Library.*) In the West libraries of some note were founded in the second half of the eighth century by the encouragement of Charlemagne. In France one of the most celebrated was that in the abbey St. Germain des Prés, near Paris. In Germany the libraries of Fulda, Corvey, and in the eleventh century that of Hirschau, were valuable. In Spain, in the twelfth century, the Moors had seventy public libraries, of which that of Cordova contained 250,000 volumes. In Britain and Italy libraries were also founded with great zeal; in the former country by Richard Aungerville; in the latter by Petrarch, Boccaccio, and others. After the invention of the art of printing this was done more easily and at less expense. The principal European libraries of modern times are the national library at Paris, with about 2,500,000 of books and 10,000 MSS., and the British Museum library, London, with 2,000,000 books and 100,000 MSS. The central court library at Munich, the imperial library at St. Petersburg, and the royal library at Berlin have each over a million volumes and thousands of MSS. Other large and valuable libraries are the imperial library at Vienna; the royal libraries at Stuttgart, Dresden and Copenhagen; the university libraries of Genoa, Prague, Göttingen, Upsala, Oxford, Cambridge and Dublin; also the libraries of Moscow, Venice, Florence, Milan, Bologna, Naples and the Advocates', Edinburgh. The Vatican library, Rome and the Bodleian, Oxford, are particularly valuable in rare books and MSS. In the United States the era of libraries began with that of Harvard College, founded in 1638, and now possessing over 850,000 books. A public library was founded in New York in 1700, and the Yale College library began the same year. Franklin in 1731 founded the first library in Philadelphia, which he spoke of as 'the mother of all North American subscription libraries.' A national library was founded at Washington in 1800. It is now the Library of Congress, and occupies the most magnificent and well-equipped library building in the world, on the shelves of which are about 1,750,000 books, with large numbers of manuscripts, maps, prints, etc. At present all our principal cities have large and rapidly growing libraries, those of Boston, New York, Philadelphia and Chicago being especially notable. The spread of education and the consequent growing taste for knowledge have called into existence innumerable smaller libraries, ready of access, and providing such literature as the special class of readers demand. This public library system has naturally been most developed in highly-educated countries, such as the United States, Germany, France and Great Britain. Public libraries, the books of which are loaned free to readers, have had an especially active development in the United States, the recent movement in this direction having been greatly stimulated by the liberal donations of Andrew Carnegie, who has provided funds for the founding of libraries in many of our smaller cities, and for large numbers of branch libraries in the principal cities. The American Library Association was founded in 1876.

Libration (lib-rȧ'shun), a term denoting certain movements of the moon, chiefly apparent, by which its globe seems to turn slightly round to each side alternately, so that we see a little farther round her globe on all sides in turn than we would if she kept absolutely the same face towards us. This motion, as it refers to the N. and S. edges of the moon's disc, is called libration in latitude; as it refers to the E. and W. edges, libration in longitude.

Libretto (li-bret'tō; It. *little book*), the book containing the story of an opera. In very many cases this is destitute of any literary quality, taste, or consistency. The Italian librettos are especially poor, and the German and English little better. Many poets and author playwrights have attempted libretto writing and subjects for operas have been taken from the works of Shakespere, Goldsmith, Goethe, Scott, Hugo, etc. Wagner stands alone in having written the librettos of his own music-dramas.

License (lī'sens), in law, the grant of permission to do some lawful act; also the document conferring such authority. All civilized countries require that persons should not carry on certain trades or professions, or do certain acts, without previous grant of license, and such licenses may be imposed for the sake of regulating traffic or raising revenue. Most numerous are licenses issued to empower persons to sell certain articles. In

Great Britain the articles not to be dealt in without a license include: beer, cider, wines and spirits, tobacco and snuff, patent medicines, gold and silver, game, sweets; besides these there are licenses for auctioneers, appraisers, armorial bearings, carriages, dogs, guns, hawkers and peddlers, male servants, pawnbrokers, etc. The license laws of America vary in the different States. A number of the States have adopted Local Option, in the question of liquor sale; others have prohibited the sale of intoxicants as a beverage, and some have imposed an almost restrictive license duty. The States that have adopted prohibition embrace Maine, Alabama, Arizona, Arkansas, Colorado, Georgia, Idaho, Iowa, Kansas, Mississippi, North Carolina, North Dakota, Oklahoma, Oregon, Tennessee, South Carolina, Washington and West Virginia. Alabama in 1911 voted to repeal prohibition and Maine, the original prohibition State, narrowly defeated repeal. Local option has brought about the prohibition of liquor sale in great parts of many other States. In Canada an act for the licensing of places for the sale of liquor came into operation in 1884. By it boards of licensing commissioners are established all over the country.

Licentiate (li-sen'shi-āt), literally a person licensed. It may express that a person possesses certain medical or other qualifications. Thus there are licentiates of the Royal College of Surgeons, licentiates in dental surgery, etc. Among Presbyterians it is applied to a person authorized by a presbytery to preach, and who thus becomes eligible to a pastoral charge.

Lichen (lī'ken, or lich-en), in medicine, a skin disease affecting adults. It consists of a number of pimples, red or white in color, either clustered or disseminated over the surface of the skin, with or without fever, or derangement of the digestive organs, usually terminating in slight desquamation, and very liable to recur, though not contagious. There are several varieties of this eruption, but in the milder forms all that is necessary is to avoid excess, especially in rich food and the use of stimulants, and to take a light diet, with diluent drinks, and a gentle laxative occasionally. Strong external applications should not be employed, but lotions of lime-water or weak solutions of the bicarbonate of ammonia, afford relief. The prickly heat so well known to dwellers in tropical climates, is a species of lichen.

Lichens, a very extensive order of cryptogamic or flowerless plants. According to a modern theory, lichens are not simple plants, but are fungi parasitic on algæ, the two being mutually dependent. They have neither stem nor leaves, but consist mainly of a *thallus* deriving its nourishment from the air. They are reproduced by spores contained in fruits called *apothecia*, which are regarded as the fungi of the particular lichen. They are common everywhere, usually in the form of flat crusts, sometimes of foliaceous expansions, adhering to rocks, the trunks of trees, barren soil, etc. They are found flourishing to the very verge of perpetual snow, and one species, the reindeer-moss (*Cladonia rangiferina*), grows in the greatest profusion in the Arctic regions, where it forms the reindeer's chief sustenance. The Iceland moss (*Cetraria Islandica*) is also abundant in the Arctic regions, and often affords aliment to the inhabitants. (See *Iceland Moss.*) Several other lichens afford dyes of various colors, these being chiefly obtained from rocks in the Azores and Canaries. Litmus is also obtained from a lichen. See *Archil, Litmus.*

Lichfield (lich'fēld), an episcopal city of Staffordshire, England, 17 miles southeast of Stafford. The principal edifice is the cathedral, a large and handsome structure, partly in the early English and partly in a more recent style, with a richly decorated west front, and three spires—two on the west, each 180, and one in the center 280 feet high. The most distinguished native is Dr. Johnson, to whom a monument has been erected facing the house where he was born. The see of Lichfield was founded in 656. For parliamentary representation the city is now included in the Lichfield division of Staffordshire. Pop. 8617.

Lick, James, philanthropist, was born in Fredericksburg, Pennsylvania, in 1796. In 1847 he settled in California, accumulating a large fortune. He died in 1876, leaving by will about $5,000,000 to various public uses, chiefly educational. These include a school of mechanical arts and the Lick Observatory.

Lick Observatory, situated on Mt. Hamilton (4227 ft.), 50 miles south of San Francisco. It belongs to the University of California and was built with money left by James Lick. The telescope has an object glass 36 inches in aperture, and is one of the largest in the world.

Licorice. See *Liquorice.*

Lictors (lik'turs), in Rome, were the public servants who attended upon the chief magistrates, consuls, pra-

ters, etc., to clear the way for them, and cause due respect to be paid to them. They carried axes tied up in bundles of rods, called *fasces*, as ensigns of office, and were selected from the lower class of free men. The number of lictors preceding the state dignitaries depended upon the rank of the latter.

Lie (lē), JONAS LAURITS IDEMIL, poet and novelist, born at Ecker, Norway, in 1833; died in 1908. He studied and practised law, but devoted his life to literature and became one of the most popular of recent Norwegian writers. His books include *The Pilot and His Wife*, *The Clairvoyant*, and other novels; *Grabow's Cat* and *Lystige Knur*, comedies; *Digte*, poems, etc.

Lieber (lē'bĕr), FRANCIS, a Germano-American writer, born at Berlin in 1800; died at New York in 1872. In youth he served as a volunteer, and fought at Ligny and Waterloo. On the termination of the war he again took up his literary studies, and in 1821 obtained his degree at Jena. Getting into trouble with government on account of his liberal opinions, he went to London in 1826, and the following year to America, where he edited the *Encyclopædia Americana*, based on the German *Conversations-Lexikon*. The South Carolina College, Columbia, elected him in 1835 professor of history and political economy, a post he held until 1856, when he accepted a similar appointment in Columbia College, New York. He wrote many books and pamphlets on morals, education and political economy.

Liebig (lē'bĭk), JUSTUS, BARON VON, one of the most eminent of modern chemists, born at Darmstadt in 1803; died at Munich in 1873. At the age of sixteen he entered the University of Bonn, and afterwards that of Erlangen, where, in 1822, he gained the degree of Doctor of Philosophy (Physical and Mathematical Sciences). At the expense of the Grand Duke of Hesse he repaired to Paris to complete his studies. He first secured the attention of the chemical world in 1824 by reading a paper before the French Academy of Sciences on fulminic acid and the fulminates, the true composition of which were until then unknown. This also gained him the favor of Humboldt, and through the latter's influence he was appointed extraordinary, and in 1825 ordinary professor of chemistry at the University of Giessen, a chair he held for 25 years. In 1850 he replaced Professor Gmelin at Heidelberg, and in 1852 he accepted the chemistry chair at Munich, with charge of the laboratory. The Munich Academy of Sciences elected him president in 1860. The results of Liebig's labors were generally given in the scientific reviews of the time, but chiefly in his own organ, *The Annalen der Pharmacie*, in the *Transactions* of the Royal Society of London, and the *Mémoires de l'Académie des Sciences*. Liebig is regarded as the founder of organic chemistry, owing to the many discoveries he made in this department. He did much to improve the methods of analysis; his *Chemistry of Food* has brought about a more rational mode of cooking and use of food; while agriculture owes much to his application of chemistry to soils and manures. The Grand Duke of Hesse created him an hereditary baron, and he received many honors from universities and learned societies of Europe and America.

Liechtenstein (lĭk'ten-stīn), a small principality, practically a portion of the Austro-Hungarian monarchy, between Vorarlberg, Tyrol and Switzerland; area, 68 square miles. Pop. 9477. The surface has a fertile soil, yielding abundance of pasture, corn, wine, fruit and flax. The chief place, Vaduz, has about 1000 inhabitants.

Liège (lī-ăzh; Flem. *Luik*; Germ. *Lüttich*), a town of Belgium, capital of the province of same name, 54 miles east by south of Brussels. It is picturesquely situated on both sides of the Meuse, the larger part rising on heights above the river on the left bank, opposite the influx of the Ourthe. It is the principal manufacturing town of Belgium, its foundries, firearm, metal and tool manufactures being very extensive; besides these there are important woolen mills, tanneries, and printing offices. Pop. 168,532.—The province has an area of 1117 square miles, with a population of 863,254. Until 1795 it was an independent state, governed by the *prince-bishops* of the German Empire; in that year France included it in the department of the Ourthe, but it was restored to Belgium in 1815, excepting certain portions annexed to Prussia. When the German armies invaded Belgium in 1914 the gallant defenders stayed the onrush of Prussian hordes at Liège for three all-important days, aiding thereby in the disruption of the German plans which had included the occupation of Paris. The hold-up of the Teutonic forces at Liège enabled the French to make preparations to meet the Germans. The Liège forts were finally destroyed by huge mortars and the town fell into German hands. See *European War*.

Liegnitz (lēg'nĭts), a town of Prussia, in the province of Si-

lesia, 40 miles W. N. W. of Breslau. It is an old but well-built town, defended by a castle, and surrounded by a boulevard planted with fine trees. It contains teresting churches, schools, and c public buildings. Its manufactures clude machinery and hardware, pianos, gloves, woolens, cottons and linens, hosiery, etc. Pop. (1910) 66,620.

Lien (lī'en, or lēn), in law, in its most usual acceptation, signifies 'the right which one person, in certain cases, possesses of detaining property placed in his possession belonging to another, until some demand which the former has is satisfied.' In the United States liens are of two kinds: (1) *specific liens*, that is, where the person in possession of goods may detain them until a claim, which accrues to him from those *identical* goods, is satisfied; (2) *general liens*, that is, where the person in possession may detain the goods, not only for his claim accruing from them, but also for the general balance of his account with the owners. An important class of liens has also been created by statute. They are called mechanics' liens, and give to men who labor, or who furnish labor or material for the erection or repair of buildings, a lien upon such buildings. This class of liens is irrespective of possession.

Liéou-Kieou. See *Loo-Choo.*

Lieutenant (lef-ten'ant, lū-ten'ant; French *lieu*, place, *tenant*, holding), in military language, the officer next below a captain. First and second lieutenants exist in the American and British armies. A lieutenant in the navy is the officer next in command to the captain of a ship. He takes rank both in the United States and British services with a captain in the army.

Lieutenant, Lord, of a county, in Great Britain, an officer appointed by the crown, the permanent and chief local representative of the sovereign. The office is supposed to have been instituted about the reign of Henry VIII. He appoints a certain number of duly qualified deputy-lieutenants, these appointments being subject to his majesty's approval; he also nominates to the lord chancellor persons to serve as justices of the peace for the county, the latter being also subdeputy lieutenants. He may also recommend for first commissions in the reserve for . He is *ex officio* a member of the County Council.

Lieutenant-colonel, in the regular army, is the officer next in rank to a colonel, and the senior of a major. He has actual command of a regiment, and is responsible for the discipline and comfort of the troops under his command, and for the various details of their organization.

Lieutenant-general, a general officer in the army, ranking above a major-general and below a general.

Life (lif). To give an unobjectionable definition of life is impossible, as whatever the definition may be it will probably err either from redundancy or defect. Life has been defined as: 'the sum total of the forces that resist death,' 'the constant uniformity of internal phenomena with diversity of external influences,' 'the special activity of organised bodies,' 'organization in action,' 'a collection of phenomena that succeed each other during a limited time in an organised body,' 'the twofold internal movement of composition and decomposition, at once general and continuous.' Herbert Spencer's conception of life is: 'The definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external coexistences and sequences.' Mr. G. H. Lewes suggests the definition: 'Life is a series of definite and successive changes, both of structure and composition, which take place within an individual without destroying its identity.'

Life-assurance. See *Insurance.*

Life Boat, a boat for saving persons from shipwreck. The first life boat was patented in Great Britain by Lukin in 1785, but Henry Greathead introduced an improved form in 1789 which proved very successful, and till 1851 was almost the only one in use. It is recognised that a life boat, to be effective, should possess the following characteristics: 1. Great lateral stability, or resistance to upsetting. 2. Speed against a heavy sea. 3. Facility for launching and taking the shore. 4. Immediate self-discharge of any water breaking into her. 5. The power of self-righting if upset. 6. Strength. 7. Stowage-room for a large number of passengers. The life boat transporting carriage is an important auxiliary to the boat. The life boat is kept on this carriage in the boat house ready for immediate transportation to the spot most favorable for launching to the wreck. In this way a greater extent of coast can secure the benefits of the life boat than could otherwise be the case; besides, a boat can be readily launched from a carriage through a high surf, when without a carriage she could not be got off the beach. The machine is admirably contrived, and the boat may be launched

from it in an upright position with her crew on board. The Lifesaving Service of the United States is supported by government funds, and the Atlantic and some of the lake coasts are now studded with lifesaving stations, provided with suitable boats, appliances and houses of refuge for the saved.

Lifebuoys, Liferafts, Lifebelts. Various kinds of buoys or other apparatus for the preservation of human life in cases of shipwreck or danger from drowning in other circumstances have been introduced from time to time, constructed in all sorts of shapes and materials. India rubber has been largely used in the construction of lifebuoys, generally in the form of belts which can be easily inflated by the wearer in the course of a few seconds. They are very buoyant and portable, but easily punctured or torn, and soon decay if put aside while damp. Hence the interior has come to be divided into cells, so that the rupture of one effects only a partial damage. Another sort is in the form of a waistcoat; and inflated pillows and mattresses made on the same principle have been found very effective. Naval officers have also strongly recommended mattresses stuffed with cork. The lifebuoy most favored by seamen of late years is composed of slices of cork so neatly arranged that they form a buoyant zone about 32 inches in diameter, 6 inches wide, and 4 inches thick. It contains about 12 lbs. of cork, is compactly covered with painted canvas to protect it from being injured by the water, and furnished with looped lifelines, that several, if necessary, may at once have a convenient hold.

Life Estate, in common law, an estate or interest in real property for life.

Lifeguards. See *Guards.*

Life Insurance. See *Insurance.*

Life-rockets, projectiles by means of which a rope is thrown either from a ship in distress to the shore, or from the shore to the ship, generally the latter. The most reliable missiles are those that are discharged from a mortar or gun by gunpowder, having a line attached to them. The *life-mortar* of Captain Manby, invented in 1807, is practically still that in use, though variations in details have been made on it from time to time. His missile was a shot with curved barbs, resembling the flukes of an anchor, to grapple the rigging or the bulwarks of a ship. An ingenious rocket-apparatus now in use is Rogers's life-anchor. It consists of a three-fluked anchor, 12 lbs. in weight, having the flukes so hinged that they pack closely together. When the anchor has been shot out from a mortar 100 or 200 yards, the flukes open and fasten to the beach or to a ship, and thus establish a communication between the two for dragging boats or men ashore. The best lines are those made of loosely-spun Italian hemp. There are several ways of arranging or *faking* the line so that it may run out quickly without kinking or entangling. The sling lifebuoy, or breeches buoy, is employed in conjunction with the rocket apparatus, after communication has been established by a rope from the shore to the vessel. It consists of a circular cork lifebuoy, having a pair of canvas breeches attached to it. The legs of the occupant protrude below the breeches, while his armpits rest on the buoy. The shipwrecked are by this means brought to the shore one by one, the buoy being drawn backwards and forwards by means of a traveling block. Or the lifecar, a sort of covered boat, may be used to convey the men ashore. In the United States the management of the life-rocket apparatus is under the control of the Lifesaving Service. The stations surround all parts of the Atlantic and lake coasts, presided over by a general superintendent, with headquarters at Washington. They are supported by appropriations made by Congress. On the Atlantic beaches the stations are located five miles apart.

Lifesaving Service, a branch of the United States Treasury Department, organized in 1871 and exceedingly useful in saving the crews and passengers of vessels wrecked on the coast. In 1910 there were 280 lifesaving stations on the ocean, and gulf coasts, and one at the falls of the Ohio, Louisville, Kentucky. Since the introduction of the system more than 22,000 persons and $225,000,000 value in property have been saved. Life boats, life lines and buoys, etc., are the chief appliances used.

Liffey (lif'fi), a river of Ireland, which rises in County Wicklow, runs W. into Kildare, then turns N. E. and passes through the county and city of Dublin into the Irish Sea; length, 50 miles. See *Dublin.*

Lifts. The term employed in Britain for the lifting apparatus known in the United States as elevators. See *Elevators.*

Ligament (lig'a-ment), in anatomy, the strong, tendinous, inelastic white bodies which surround the

joints, and connect bones, or strengthen the attachments of various organs, or keep them together. Every joint is surrounded by a capsular ligament; the tendons at the wrist and ankle are bound down by what are called the annular ligaments. In dislocations of joints the capsular ligament is often broken.

Ligan. See *Flotsam.*

Light (lit), the agent which enables us through the organ of sight to take cognizance of objects; it has a heating and chemical action which is all-important to animals and plants; without it there would probably be neither animal nor plant life. The sun, the fixed stars, nebulæ, certain meteors and terrestrial bodies in a state of incandescence or phosphorescence are self-luminous. The origin of light has been explained by two main theories, the *emission* or *corpuscular* theory adopted and developed by Newton, and the *undulatory* or *wave* theory, the fundamental principles of which were laid down by Huygens and Euler. Newton held that the sun and other light-giving bodies threw off, with immense velocity, vast numbers of exceedingly minute particles of matter, which passed into space, and by their mechanical action upon the eye brought about the sensation of light. Numbers of distinguished men accepted this theory, and many of the phenomena of light were plausibly explained by it. Huygens suggested that light was due to some sort of wave motion transmitted through a medium. His theory, offered towards the end of the seventeenth century, made little progress until the beginning of the nineteenth century, when its truth was amply established by the labors of Young, Fresnel and others; and it is now universally accepted. Though we are warranted in recognizing the existence of the transmitting medium called ether, of its nature we are as yet largely in ignorance. Rays of light proceed in straight lines, and when a screen is removed to twice or three times its distance from a luminous point it receives only one-fourth or one-ninth of the light per unit of area which it received formerly. This is the law of inverse squares, viz., the intensity of the light received from a luminous point is inversely proportional to the square of the distance from the point. Advantage is taken of this fact in determining the relative illuminating powers of two sources of light by means of the photometer. In 1676 Roemer discovered that light is not instantaneously propagated from luminous bodies to the eye; and he calculated its velocity. Bradley, Foucault, Fizeau, Cornu, etc., made similar measurements, and it has been determined that light travels at the rate of about 186,000 miles per second.

When light falls upon the surface of a body part of it is reflected. When the surface is smooth and regular an eye placed to receive the reflected rays generally observes an image of the source of light, and the surface may be called a mirror. When it is not smooth the light which falls upon it is scattered in all directions, so that the surface itself becomes visible; planets and nearly all terrestrial objects become visible in this way by means of reflected solar light. While part of the light which falls upon the surface of a body is reflected, part enters into the body, which absorbs or destroys a certain amount of it and may allow the rest to pass through. When light falls nearly vertically on a glass surface very little of it is reflected, but as the incidence becomes more and more oblique a steadily increasing proportion of the light is reflected. Polished metals, particularly silver, are good reflectors of light at all incidences, and hence metallic surfaces are most commonly used as mirrors. The law of reflection was known to Archimedes; it is—the incident and reflected rays make equal angles with a perpendicular to the surface, and lie in the same plane with it. When a ray has passed obliquely from air into water, although in the water as in the air it is a straight line, this is not a mere continuation of its old path; it is bent to some extent at the point where it enters the new medium, the bending of the ray being called *refraction.* This bending of a ray when it passes from one medium, such as air, into another homogeneous medium, such as glass or water, or from air into denser air, is subject to a particular law. The law of refraction was discovered in the seventeenth century; it is—whatever be the obliquity of a ray passing from one medium to another, the sines of the angles made by the incident and refracted rays with the perpendicular to the refracting surface are in a constant ratio, which has been called the *index of refraction.* When a ray of light passes through a medium, such as the atmosphere, which continuously varies in density from place to place, its direction continuously changes, so that it is a curved line, a fact to which the phenomenon of the mirage is due. The application of mathematics to the two laws of reflection and refraction is called *optics:* this science includes the formation of images by mirrors and lenses, the eye, microscopes, telescopes, etc. See *Optics.*

Newton found that red light is not so

much refracted as blue light when it passes from one medium to another. When a ray of solar light is refracted in passing through a glass prism he found that a great number of rays of different colors left the prism, the blue ray being most bent from its former path and the red ray least. (See *Prism*, *Rainbow*.) Letting these rays fall upon a screen he obtained a band of colors which he called a spectrum. Thus he had decomposed solar light and found it to consist of a mixture of lights of every gradation of refrangibility. On permitting all the colored rays to pass through a lens before falling on the screen they combined and became white light again. Newton failed to observe one peculiar feature of the spectrum which has since been studied, and has led to important results—namely, that it was not really continuous, but was crossed by a number of dark lines. From this has arisen the instrument called the *spectroscope* and the branch of physics called *spectrum analysis*. See these words.

In Newton's experiment with solar light and the prism we find that the blue and green rays very slightly affect a thermometer, the yellow rays affect it slightly, and the extreme red rays possess great heating properties; moreover, when the thermometer is passed beyond the red into a space in which there are no luminous rays a maximum heating effect is produced. Again, the red and yellow rays are all but incapable of blackening photographic paper, whereas the blue and violet rays exert a rapid chemical action, and this is even exceeded by the invisible rays beyond the violet. It is evident then that (1) some of the solar rays which pass through the prism do not affect the retina; these rays are either less refrangible than red light, or are more refrangible than violet; (2) the least refrangible solar rays possess most heating power; (3) the most refrangible rays are capable of exerting the most powerful chemical action. As glass prisms absorb many of the heat rays it is convenient to use prisms of rock salt in examining the heat (red) end of the spectrum.

Young showed that two rays of light may destroy each other's effects and produce darkness. He applied this discovery to the explanation of many natural phenomena, such as the colors in mother-of-pearl, on soap-bubbles, etc. It has also been shown that rays of light may bend round obstacles. When a ray of light enters Iceland spar it divides into two rays, which travel in different directions; these two rays possess peculiar properties which are not exhibited by ordinary rays of light, and are said to be *polarized*. These polarized rays cannot be made to interfere or destroy each other's effects, but either of them may be divided into two interfering rays. These and other allied phenomena are accepted by physicists as proofs that (1) there exists throughout all space a very elastic medium of small density, known as the *ether;* (2) the particles of all bodies are in a state of vibration; a rise in temperature of a body indicates an increase in the rapidity of vibration of its particles; (3) radiation of heat consists in the transmission of these vibrations from the particles of a body through the ether to all parts of space; (4) when these vibrations communicated by the ether become rapid enough they are able to affect the retina of the eye and are then called light; (5) lights differ in color when their vibrations are not executed in equal times; (6) the vibrations of particles of the ether are all executed at right angles to the direction of propagation of the light; (7) in a ray of polarized light the vibrations are all executed at right angles to a certain plane called the plane of polarization; (8) the planes of polarization of the two rays in Iceland spar mentioned above are at right angles to one another.

Light, Aberration of. See *Aberration*.

Light, Artificial, any kind of illuminant for supplementing the light of the sun. Some form of artificial light must have been in use for domestic purposes from the very earliest times, but though large cities and a high state of civilization existed among the Egyptians, Greeks and Romans, the systematic lighting of streets was unknown to them. From the writings of Libanius, however, who lived in the beginning of the fourth century after Christ, we may conclude that the streets of his native city, Antioch, were lighted by lamps, and Edessa, in Syria, was similarly illuminated about A.D. 500. Of modern cities Paris was the first to light its streets. In the beginning of the sixteenth century it was much infested with robbers and incendiaries, so that the inhabitants were ordered, in 1524, to keep lights burning after nine in the evening, before all houses fronting a street. In 1558 *falots* (a large vase filled with pitch, rosin, and other combustibles) were erected at the corners of the streets. In London in 1668 the inhabitants were instructed to hang out candles. A more definite order was issued in 1690. Every housekeeper was required to hang a light or lamp, every night, as soon as it was dark, between Michaelmas and Ladyday, and to keep it burning till the hour of twelve at night. Successive acts of

Parliament and orders of the common council provided from time to time for the better lighting of London. The Hague commenced street lighting in 1552, Hamburg in 1675, Berlin in 1679, Copenhagen in 1681, Vienna in 1684, Hanover in 1696, Leipsig in 1702 and Dresden in 1705. The application of coal gas to economical purposes by Murdoch in 1805 opened a new era in artificial lighting. The United States cities came later into the field of efficient lighting, gas not being used for street lighting for years after it had been introduced in England. The development of electric lighting, however, has proceeded more actively here than elsewhere, and within recent years the brilliancy of street, store and house lighting has made phenomenal progress. The illuminating power of coal gas has been greatly increased by use of the Welsbach mantle, and acetylene gas has been found to yield a brilliant light. See *Electric Light*, *Gas*, *Paraffin*, *Petroleum*.

Light Cavalry, or HORSE. See *Cavalry*.

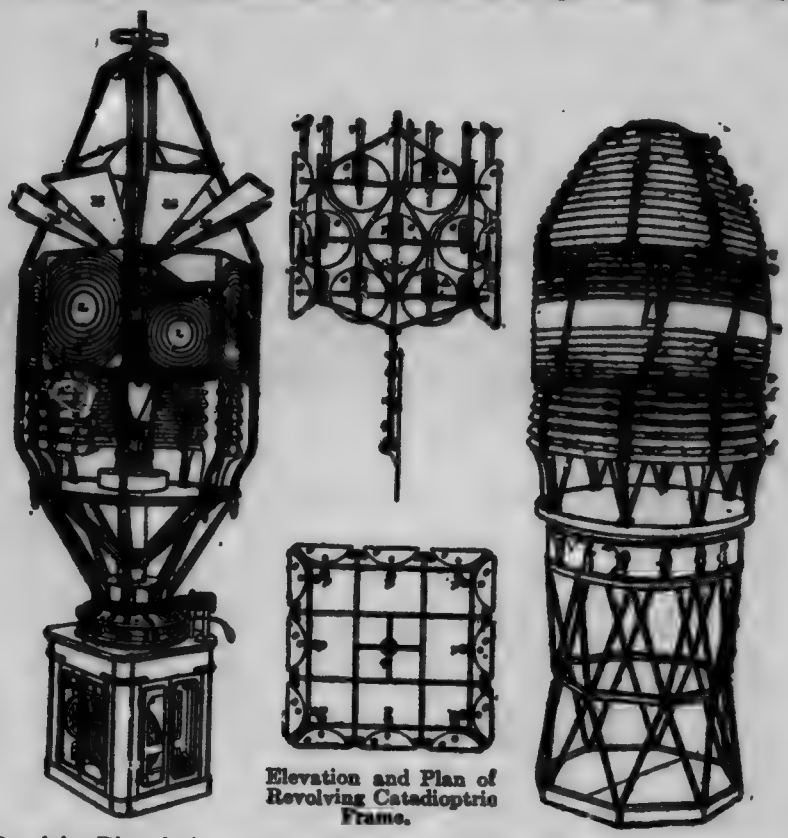
Light, ELECTRIC. See *Electric Light*.

Lighter (lī'tèr), a large, open, flat-bottomed vessel, employed to carry goods to or from a ship.

Lightfoot (līt'fut), JOHN, an English divine and Hebrew scholar, born at Stoke-upon-Trent in 1602; died at Ely in 1675. He was educated at Cambridge. He held various livings, and in 1655 became vice-chancellor of Cambridge; but his claim to notice rests chiefly on his great knowledge of rabbinical literature and Hebrew antiquities, and his able Biblical criticism. Of his writings the *Horæ Hebraicæ et Talmudicæ*, etc., are the most important.

Lighthouse (līt'hous), a tower or other lofty structure with a powerful light at top, erected at the entrance of a port or on some rock or headland, and serving as a guide or warning of danger to navigators at night. The Pharos of Alexandria, founded about 300 B.C., is the earliest building erected expressly as a lighthouse of which we have any authentic record. It is stated to have been 550 feet high. Lighthouses are supposed to have been erected by the Romans at Flamborough Head, Dover and Boulogne. In modern times the first important lighthouse erected was the Tour de Cordouan, at the mouth of the Garonne in France, founded in 1584 and completed in 1610, altered and improved in 1727. It is 197 feet in height, and in architecture surpasses all other lighthouses in the world. The first sealight on the British coasts, for which a toll was leviable, was that of Dungeness, for which letters patent were granted by James I shortly after his accession. Until about 1676 nearly all the lighthouses were provided by private persons; subsequently they began to be built by the corporation known as Trinity House, and an act passed in 1836 empowered the corporation to purchase all private lights. In the United States the lighthouses are under the Lighthouse Board, which has charge of all buoys, beacons, etc., on the coasts and waters of the States. The earlier lights were simply of wood, and later fires of coal exposed in open chauffers upon the top of a tower. When oil was first introduced as an illuminant is not known. An immense improvement in lighting was made a few years previous to the French Revolution by the introduction of parabolic reflectors, which concentrate and throw forward in a horizontal direction the rays of light proceeding from lamps placed in their foci. At the same time the revolving frame carrying the lamps and reflectors was introduced, and has proved of the greatest utility in establishing a distinction between lights. The reflectors are composed of sheet-copper plated with silver, and formed into a parabolic curve by a laborious and delicate process. This mode of lighting is termed the *catoptric* or *reflecting* system. It is so called in opposition to the *dioptric* or *refracting* system, in which the illumination is produced by a central lamp, the rays from which are transmitted through a combination of lenses by which it is surrounded. The adoption of lenses in lighthouses, though suggested as far back as the middle of the last century, was first carried into practical effect in 1788 by M. Augustin Fresnel, a distinguished French savant. The superior advantages which this system has been found to possess over that of reflectors has led to its general adoption in most lighthouses. Fresnel likewise contrived a combination of the two systems, the apparatus in which consists of thirteen rings of glass of various diameters, arranged one above another in an oval form. The five middle rings form a cylindrical lens through which the rays from the central lamp are transmitted by *refraction*, while the other rings or prisms, five of which are upper and three lower, are constructed in such a manner as to project by *reflection* the light from the focus in a direction parallel with the refracted rays. The light thus obtained is termed the *catadioptric* light. A modification of the dioptric and catadioptric systems, so as still further to prevent the loss of the rays of light, and thereby increase the in-

tensity of their resultant beam, was introduced by Mr. Thomas Stevenson under the designation of the *holophotal* system, its object being to effect the useful application of the *whole* of the light. The catoptric, dioptric and catadioptric systems are illustrated in the accompanying



Elevation and Plan of Revolving Catadioptric Frame.

Revolving Dioptric Apparatus. LIGHTHOUSE. Fixed Catadioptric Apparatus.

figures. In the first the reflectors *o o* are shown as arranged on the revolving frame, *p p* being the oil-lights, *r r* copper tubes conveying away the smoke. In the dioptric apparatus F is the light, L L L′ L′ are lenses, M M plane mirrors reflecting the rays falling on them in a horizontal direction, Z Z′ zones or belts of glass prisms. In the other figure ABC, A′B′C′, are respectively upper and lower zones of prisms, D E F the cylindric refracting belt. Various means of exhibiting the light have been adopted, so as to make a distinction between different lighthouses. Thus the *flashing* light shows five or more flashes and eclipses alternately in a minute; the *fixed* light has a white or red flash in addition, at intervals of several minutes; in the *revolving* light the light gradually increases to its full effect, then decreases till it is eclipsed. Other methods add to the diversity of lights, as the *intermittent*, the alternate, etc.

Oil, particularly paraffin, has long been employed, and it is likely to remain in use in isolated lighthouses. Gas was the first substitute for oil. With it an eclipse can be simply produced by a partial stoppage in the supply pipes, and there is no such waste of light as when oil is employed. A burner for gas invented by Mr. J. R. Wigham presents a total of 108 jets arranged in concentric circles. Gas has been successfully employed in illuminating buoys for the guidance of vessels. The buoys (which, of course, are gas and water-tight) are charged to a pressure of perhaps ten atmospheres, giving a continuous light for three of four months; a luminous paint has also recently been applied with advantage to buoys. The electric light has been more recently adopted, and experiment proves it to be the most powerful and penetrative of all lights, too much so in some cases, as its

intensity is apt to be blinding when vessels are near at hand. It has not yet been demonstrated that oil as an illuminant has been especially improved upon. In the United States the reliability of oil has been fully demonstrated and the conclusion reached that vaporizing the oil and using it to heat incandescent mantles of refractory materials is the most efficient and economical method. Buoys have been placed in the Ambrose channel to New York harbor in which acetylene is the illuminant used. It has proved very satisfactory. The *Eddystone* and *Bell Rock* are the two most celebrated British lighthouses. Among lighthouses, built under peculiar difficulties of construction is the Tillamook Rock light station, opposite Tillamook Head, Oregon. Opposite Crescent City, Cal., at Northwest Seal Rock, the difficulties were even greater. In Delaware Bay, on a shoal known as Fourteen-foot Bank, an extremely difficult foundation was overcome. The most powerful light in the world is that of the great lighthouse on Heligoland Island, Germany, in the German Ocean, opposite the mouth of the Elbe. It has an electric installation with three search-lights, its 40,000,000 candle-power being without a rival.

Lightning (lit'ning), a flash of light resulting from a sudden discharge of atmospheric electricity. It may be a diffused reddish white or violet flash, seemingly spread over a considerable extent of the sky, or a zigzag or rather sinuous line of very brilliant light, resulting from a discharge between two clouds or between a cloud and the earth. *Heat* or *sheet lightning* is unaccompanied by thunder; it is now generally held to be the reflection from aqueous vapor and clouds of a discharge occurring beyond the horizon. Sometimes during a thunderstorm *fireballs* are seen, but no exact observations of them have yet been made. Experiments show that the duration of a flash of lightning is inconceivably small, in some instances not more than a millionth part of a second. The *spectrum* of lightning shows the presence of incandescent nitrogen, oxygen, hydrogen and sodium. Certain electroscopic experiments seem to show that previous to a discharge between two clouds internal discharges are taking place in both. Lightning in passing through air and non-conductors, metallic rods, etc., exhibits all the phenomena of the passage of a very great quantity of electricity; it kills animals, splits trees and stones, and melts thin wires. Sometimes on entering the earth the lightning melts the siliceous substances in its way, producing the tubes called *fulgurites*. After a lightning discharge the peculiar odor of ozone may be observed, as in the neighborhood of an electric machine. Objects at a distance from a place of discharge may have previously been charged with electricity by the induction of the clouds; the distant discharge suddenly sets free this electricity so that it passes through the objects to the ground, producing a *return shock*; men and animals have often been killed in this way. A large number of photographs of lightning flashes from all parts of the world have been collected, and it is hoped that by their means many obscurities connected with the phenomenon will soon be cleared up. *Thunder* is due to the sudden disturbance of the air produced by a lightning discharge; the long, rolling effect is perhaps due to echoes from the clouds, perhaps partly to there being a number of discharges at different distances from the observer. Sound travels at ordinary temperatures about 1100 feet per second, so that a thunder-clap from a distance of one mile would reach us in about five seconds. See *Conductor*, *Electricity*.

Lightning-rod. See *Conductor*.

Lightship, or LIGHTBOAT, a vessel, usually single-masted, serving as a lighthouse in positions where a fixed structure is impracticable. Octagonal lanterns, fitted with Argand lamps placed in the foci of parabolic reflectors, are usually hoisted on the mast; but they are less efficient and more expensive in maintenance than land lights.

Lign-aloes. See *Aloes-wood*.

Lignine (lig'nin), a modification of cellulose (which see).

Lignite (lig'nit), or BROWN COAL, compressed and altered vegetable matter intermediate in its qualities between peat and coal. It occurs in the tertiary strata in many European countries, occasionally in thick beds, as in Germany and France, and vast deposits of it exist in the Western United States, especially in North Dakota and Montana. Texas and New Mexico also are abundantly supplied with lignite and other grades of subbituminous coal, the total supply in the United States, exclusive of Alaska, being estimated at 740 billions of tons. Alaska has also a large supply. This coal was long deemed useless for steam-making purposes, but it has recently been found that, by converting it into producer gas, it is capable of yielding more power per ton than the higher grades of coal. This gives immense value to the American deposits. See *Coal*.

Lignum Vitæ. See *Guaiacum.*

Ligny (lēn-yē), BATTLE OF, June 16, 1815. See *Quatre-Bras* and *Waterloo.*

Ligula (lig'ū-la), LIG'ULE, in botany, a strap-shaped petal of flowers of the order Compositæ; also the membrane which occurs at the base of the lamina of a grass leaf, as that of millet.

Liguria (li-gū'ri-ä), one of the larger divisions (compartimenti) of Italy; area, 2037 square miles. It includes the towns of Genoa, Spezzia and St. Remo, and is the most important maritime division. The Roman Liguria was much more extensive. The Republic of Genoa existed as the *Ligurian Republic*, under a democratic constitution granted by Bonaparte, from 1797 to 1805, when it was annexed to France. From 1814 to 1860 it formed part of the Kingdom of Sardinia.

Ligurite (lig'ū-rit), a variety of sphene, a mineral occurring in oblique rhombic prisms, of an apple-green color, occasionally speckled externally; so called on account of its being chiefly found in Liguria. Its color, hardness and transparency have caused it to be classed as a gem.

Ligustrum. See *Privet.*

Li-Hung-Chang, a Chinese statesman, was born in 1823. He was viceroy of China when, with Gen. Gordon, he suppressed the Taiping rebellion, 1860. He held other high posts, made the treaty of peace with Japan after the 1895 war, and in 1898 was deposed from his post of grand chancellor. Twice he visited Europe and was once in the United States, where he attracted much notice. In 1899 he was restored to his former dignity, and died in 1901. He was most frequently looked upon as one of the leading diplomatists of his time.

Lilac (lī'lak; *Syringa vulgaris*, nat. order Oleaceæ), a familiar fragrant-flowered shrub, 8-10 feet high, is a native of Southeastern Europe and Asia, and is widely planted in the United States, being one of the most familiar and most beautiful of our spring-flowering ornamental shrubs. There are several varieties, the most common color of the flowers being lilac, but there are also some white ones.

Lilburne (lil'burn), JOHN, a celebrated English sectary, born in 1618; died in 1657. For tracts against the Anglican hierarchy he was whipped and imprisoned in 1637, but the Long Parliament released him in 1640. His friends got the conviction declared illegal and tyrannic, and Lilburne received £3000 as indemnity. He then joined the army, and rose to the rank of lieutenant-colonel. He was one of the party known as the *Levellers*, and for his attacks on Cromwell and others was oftener than once sent to the Tower. Having been condemned to exile, and having returned without leave, he was put in prison and tried for his life, when he was acquitted, but not liberated for some time. Subsequently he became a member of the Society of Friends. Hume describes him as 'the most turbulent, but also the most upright and courageous of men.'

Liliaceæ (lil-i-ā'se-ē), the lilies, a large nat. order of endogenous plants. They are stemless herbs, or shrubs with a simple or branched trunk, with bulbous or fascicled roots. They have six hypogynous or perigynous stamens, with usually introrse anthers; a three-celled ovary, each cell being usually many ovuled, an entire style, and a capsular fruit. They are much more abundant in temperate climates than in the tropics, where they chiefly exist in an arborescent state. The lily, fritillary, hyacinth, star of Bethlehem, tulip, dragon-tree, squill, aloe, onion, garlic, etc., belong to this order.

Lilith (lil'ith), according to rabbinical legends, Adam's first wife, mother of giants and demons.

Lilium (lil'i-um), a genus of bulbous plants. See *Lily.*

Liliuokalani (lil-i-ū-ō-ka-la'ni), LYDIA KAMEKEHA, ex-queen of Hawaii, born at Honolulu in 1838. She succeeded King Kalakaua in 1891 and at once sought to abolish the constitution and rule as an absolute monarch. This led to a revolt on the part of the American inhabitants and she was dethroned in 1892 and a provisional government was organized. Following the annexation of Hawaii by the United States she retired to private life. Died November 11, 1917. See *Hawaii.*

Lille (lēl), a town of France, capital of the department Nord, and chief fortress of the northeast of France, near the Belgian frontier. It is remarkably well built; has spacious, regular streets, lined with large, massive houses of brick or stone, with the usual public buildings and institutions found in large cities. The Haute and Basse Deule, sluggish streams, traverse the town, and are connected by a canal, while the country around is so flat that for about 1½ miles it can be laid under water. Lille is the center of an extensive commerce. The manufacture of linen and cotton thread and fabrics is

the most important, but fine woolen cloth, velvets and carpets are also largely produced; in fact, the factories of Lille cover almost the whole range of textile goods. Chemicals, leather, machinery, paper, beet-sugar, etc., are also turned out in ever-increasing quantities. Lille originally belonged to the counts of Flanders. In 1667 it was taken by Louis XIV, and was fortified by Vauban. It was taken after a siege of several months by Eugene and Marlborough in 1708, but was restored to France by the Peace of Utrecht in 1713. In 1792 it was ineffectually bombarded by the Austrians. Pop. (1911) 217,807.

Lillibullero (lil-i-bul-lē'rō), the name of an Irish ballad, whose refrain was *lillibullero bullen a la*, popular among the army and supporters of William III in the war in Ireland during the revolution of 1688. The verses were written by Thomas Wharton, who claimed that he had 'sung a king (James II) out of three kingdoms.'

Lillo (lil'lō), GEORGE, an English dramatic writer, born in London in 1693; died in 1739. Although carrying on the trade of a jeweler, he found time to write a number of well-received pieces for the stage. The most successful of these was his domestic drama entitled *The London Merchant, or the History of George Barnwell*, 1731.

Lilly, LILY, or LYLY, JOHN, an English dramatic and miscellaneous writer, born about 1553, studied at Oxford and Cambridge. He wrote nine dramatic pieces which are now forgotten. He attempted to reform and purify the English language in two fantastic romances entitled *Euphues and his Anatomy of Wit* (1580), and *Euphues and his England* (1581), which met with great success.

Lilly, or LILY (lil'i), WILLIAM, an English astrologer, born in 1602; died in 1681. He assumed the role of prophet and seer, and the credulity of the age was such that he was consulted and believed in by high and low. In 1644 he first published his *Merlinus Anglicus*, which he continued annually until his death. He wrote a number of mystic books, which generally met with a ready sale. His autobiography is very entertaining. He not only acquired fame, but also a large fortune.

Lily (lil'i), a genus of plants, nat. order Liliaceæ. The root is a scaly bulb; the leaves simple, scattered, or verticillate; the stem herbaceous, simple, and bearing at the summit very large and elegantly-formed flowers. The flower consists of six petaloid sepals, the calyx and corolla being alike in form and color. There are many species, those best known in Europe being the white, orange and scarlet lilies, the tiger lily, etc. The common white lily (*Lilium candidum*) is a native of Syria, Persia, and other eastern countries. The finest American species is the *L. superbum*, which grows in marshes to the height of 6 or 8 feet, bearing reflexed orange flowers spotted with black. A well-known Japanese lily (*L. auratum*) is one of the noblest flowering plants in existence, and highly fragrant. *L. gigenteum* grows to the height of 12 feet. In the middle ages and in modern times the white lily has been the emblem of chastity, hence the Virgin Mary is often represented with a lily in her hand or by her side.

Lilybæum (lil-i-bē'um), the name given by the ancients to Cape Bœo, the most western promontory of Sicily. The Carthaginians, about B.C. 350, founded here a town of the same name, which became their principal naval station in Sicily. See *Marsala*.

Lily-of-the-valley (*Convallaria majalis*), a plant of the nat. order Liliaceæ, distinguished for its small and beautiful bell-shaped flowers of an agreeable odor. It is found in Europe, Asia and North America. It is used as a heart stimulant.

Lima (lī'ma), a city, county seat of Allen County, Ohio, 72 miles south of Toledo, in the center of Ohio oil field with oil wells and a large oil refinery in its vicinity. It has locomotive works, steel foundry, motor truck plants, cigar factories and other industries. The State hospital for criminal insane is located here. Pop. (1910), 30,508.

Lima (lē'ma), the capital of Peru, is situated at the foot of granitic hills, 7 miles from Callao, its port on the Pacific, on the small river Rimac. It is regularly built, and many of the streets have a stream of water running down the center. The numerous domes and spires give Lima a fine appearance from a distance, but the houses are mostly of unburnt brick. Among the public buildings and institutions the cathedral, the convent of San Francisco, the exhibition palace, and the university with its national library and museum, deserve special mention. The city has botanical gardens and a very large bull-ring. The manufactures are unimportant, but there is a considerable import and export trade through the port of Callao. The climate is very agreeable, but the locality is subject to earthquakes, the most destructive being that of 1746. Lima was founded in 1535 by Pizarro, and called Ciudad de los Reyes (City of the Kings). In January, 1881, during the war with Chile, Lima

capitulated to the Chileans, who occupied it thereafter for more than two years. Pop. (1913) 143,500.

Limasol (lē-ma-sōl'), or LIMIS'SO, a seaport of Cyprus, on the south coast, with a considerable trade. Pop. 8298.

Lima-wood, a name sometimes given to the wood of *Cæsalpinia echinata*. See *Brasil-wood*.

Limax. See *Slug*.

Limber. See *Gun-carriage*.

Limbourg, or LIMBURG (lim'burg), a province of Belgium, separated by the Maas from Dutch Limburg; area 942 square miles; pop. (1904) 255,359. Hasselt is the capital.

Limburg, a province of Holland, partly intersected by the Maas; area, 850 square miles; pop. 281,984. Agriculture and cattle-rearing are the chief occupations, and there is a large export trade in butter and cheese. The capital is Maastricht.

Limburg, a town of Prussia in the district of Wiesbaden, on the Lahn, with a fine old cathedral in the Romanesque style, recently restored. Pop. (1905) 9917.

Lime (lim), the oxide of the metal calcium. This oxide, which in a state of combination is one of the most abundant bodies in nature, has been known and used from the remotest antiquity. The forms in which it occurs native are very numerous, but it does not exist in a pure state in nature, its affinity for carbonic acid being such that it absorbs it from the atmosphere, when it becomes converted into carbonate of lime. Combined with carbonic, sulphuric, phosphoric and other acids it constitutes large rock masses, and even mountains; it is present in sea and other waters; it is a constituent of most soils and of a great number of minerals; and is essential to plants and animals.

Ordinary lime is obtained with most facility from the carbonate (see *Limestone*), from which by a strong heat the carbonic acid may be expelled. This process is conducted on a large scale with the different varieties of limestone, which are calcined or burned in order to obtain the caustic earth, or *quicklime*, as it is called. The lime thus obtained, however, is rarely pure enough for chemical purposes. Pure lime is a soft, white substance, of the specific gravity of 2.3. It is quite infusible, but when heated in the oxyhydrogen blowpipe it emits one of the intensest of artificial lights, and it has accordingly been employed for a signal light and for facilitating the observation of distant stations in geodetical operations. It is soluble in about 700 parts of cold water. The solubility is diminished by heat. If a little water be sprinkled on new burned lime it is rapidly absorbed, with the evolution of much heat and vapor. This constitutes what is known as slaking. The heat proceeds from the combination of the water with the lime, forming a *hydrate*, as the slaked lime is called. This is a compound of 56 parts of lime with 18 of water, or rather more than 3 to 1. The water may be expelled by a red heat. Lime-water is astringent, and somewhat acrid to the taste. It renders vegetable blues green, and yellows brown; and restores to reddened litmus its usual purple color. Lime, submitted to the action of galvanism in high intensity, afforded Sir H. Davy satisfactory evidence that, in common with the other earths, it consists of a metal, which he denominated *calcium*, and oxygen, the proportions being 72 of calcium and 28 of oxygen. (See *Calcium*.) Chlorine combines directly with lime, forming the very important substance used in bleaching, called *chloride of lime* or *bleaching-powder*. It is formed by passing chlorine gas over slaked lime. Chloride of lime is also used as a disinfectant.

The uses of lime are almost too numerous to mention, for there is hardly any operation in the arts for which lime is not at some part indispensable. In the manufacture of basic Bessemer steel (see *Steel*) it forms about one-half of what is called 'Thomas slag,' which, when ground, makes a cheap and efficient fertilizer; it is employed in the early stages of leather dressing to remove hair, fat, etc., from the hides; it is used in metallurgy as a flux; in soap-boiling to causticize the alkaline liquors; in the manufacture of washing soda; for neutralizing acids; for making mortars and cements; in agriculture to destroy inert or noxious vegetable matter, and to decompose heavy clay soils; and in the *materia medica*, chiefly as an antacid.

Lime, or LINDEN (*Tilia*, nat. order Tiliaceæ), a large tree, with alternate, simple, and cordate leaves, and sweet-scented flowers, disposed on a common peduncle. The common linden (*T. europæa*) is a well-known tree. The inner bark of all the species is very tenacious; it is called *bast*, and mats are made of it in Russia in large quantities. The wood is rather soft, close-grained, and much used by turners. The American lime, or bass-wood (*T. americana*), is a large and beautiful tree, resembling the European species.

Lime (*Citrus limetta*), a small globular-shaped lemon, the fruit of a shrub about 8 feet high. It is a native of India and China, but was introduced into Europe long before the orange, and is now extensively cultivated in the south of Europe, the West Indies, and some parts of Southern America. The fruit is agreeably acid, and its juice is employed in the production of citric acid, in beverages, etc.

Lime Light. See *Oxyhydrogen Light.*

Limerick (lim'ér-ik), a city of Ireland, capital of Limerick county, and a county of itself, is situated at the interior extremity of the estuary of the Shannon. It consists of three parts, connected by five bridges, one of which, the Wellesley Bridge, a magnificent structure crossing the harbor, cost £85,000. The principal buildings are the Episcopal and Roman Catholic cathedrals, savings bank, chamber of commerce, exchange, assembly house, linen hall and corn and butter markets. The industries include the curing of bacon, the preparation of butterine, flax spinning and weaving and lace making. There are distilleries, breweries, tanneries, corn mills, a large military clothing establishment, and shipbuilding slips. Limerick is the leading port on the west coast for the shipment of produce. Pop. 38,151.—The county belongs to the province of Munster; area, 1064 square miles. The surface is in general flat, or an undulating plain, excepting in the northeast, south and southwest, where it rises into mountains. The principal river is the Shannon, the estuary of which forms great part of the northern boundary. The occupations are chiefly agricultural; pasturage and dairy farming are most general. Large quantities of farm produce are exported. Pop. 146,098.

Limestone (lim'stōn), a species of mineral comprising numerous varieties of carbonate of lime, differing considerably in external appearance, structure and composition. It is, if pure, essentially composed of 57 parts of lime and 43 of carbonic acid; but in some rocks the limestone is intermixed with magnesia, alumina, silica, iron, etc. All limestones give readily to the knife. They are infusible; but when impure, by an admixture with a portion of other earths, they vitrify in burning. All limestones effervesce when a drop of strong acid is applied on the surface, and they dissolve entirely in nitric or hydrochloric acid. Limestone is found both in primary and in secondary rocks, but most abundantly in the last. It is also not uncommon in alluvial deposits, when it is called *calcareous tufa*. Limestone has frequently a granular structure; and the size of the grains is variable, in some degree corresponding with the relative age of the mineral. Thus limestone which occurs in beds in gneiss, has usually a coarse texture and large granular concretions; but when its beds exist in mica slate, or argillite, its texture becomes more finely grained, and its color less uniform. Silurian and Devonian limestones have a texture more or less compact; the colors are often variegated; and they often contain fossils. Secondary limestone has a compact texture, a dull fracture, and usually contains shells, and sometimes other organic remains. It is always stratified. The specific gravity of limestone varies from 2.50 to 2.90. Calcareous spar is the purest variety of carbonate of lime. It is frequently very transparent, and is then strongly double-refractive, this peculiarity being best seen in the variety known as *Iceland spar*. Among the varieties of limestone are: *calcareous spar, granular limestone, foliated limestone, compact limestone, oolite* or *roestone, peastone* or *pisolite*, etc. Compact limestone passes into *chalk* when the particles are somewhat loosely connected with each other, so that the whole assumes an earthy character. A variety of very fine-grained compact limestone is used in lithography, the best being that obtained near Pappenheim and Solenhofen in Bavaria. When sufficiently close in texture to admit of being polished limestone takes the name of marble. As such it is an important building material. The origin of limestone is very largely organic, immense quantities of lime, dissolved in sea-water, being abstracted to form the shells or hard portions of the numerous animals that inhabit it, crustacea, mollusca, zoöphites, and foraminifera. Chalk is mainly composed of the skeletory of microscopic creatures, and corals build limestone reefs of enormous magnitude, many oceanic islands being built upon a thick basis of this material.

Limit (lim'it), in mathematics, is a determinate quantity to which a variable one continually approaches in value. Thus if a polygon be inscribed in a circle, its area is of course less than that of the circle; but as the inscribed polygon is made to have more and smaller sides its area gets more nearly equal to that of the circle, though it can never quite equal it.

Limited Liability. See *Joint-stock Companies.*

Limnæa (lim-nē'a), a genus of fresh-water, univalve, gasteropodous molluscs, having a lung sac instead of gills. They have the power of floating on their back, the foot forming a kind of boat. They are found in all parts of the world, and occur fossil, especially in the Wealden.

Limoges (li-mōsh), a town of Western France, capital of the department of Haute-Vienne, and former capital of Limousin. The most remarkable edifices are the cathedral; the bishop's palace, the finest modern edifice of the town; the town hall; and the public library. The principal industry is the manufacture of artistic porcelain, known as Limoges ware, and employing over 5000 hands. It is exported to all parts of the world. There are also wool and cotton spinning mills, cloth factories, foundries, paper mills and extensive shoe and clog-making establishments. In 1790, and again in 1864, whole quarters of the city were destroyed by fire. Pop. 92,181.

Limonite (lī'mo-nīt), a very important ore of iron, varieties of which are bog iron ore and brown hematite. It is a hydrated oxide of a brownish color, occurring in mammillated or botryoidal masses, and is found abundantly in Europe and America.

Limousin (li-mō-zan), an ancient province near the center of France, forming at present the chief part of the departments of Haute-Vienne and of Corrèze. Limoges was the capital.

Limoux (li-mō), a town of France, dep. Aude, on the Aude River. Pop. 5458.

Limpet (lim'pet), a gasteropodous mollusc which adheres to rocks partly by the suctorial powers of its broad disc-like foot and partly by a glutinous secretion. The common limpet (*Patella vulgāris*) is often found ensconced in a shallow pit excavated out of the rock, and which it has made or rasped out by the siliceous particles embedded in its foot. From this pit the limpet, when covered by the tide, makes short journeys in quest of its food, which consists of algæ, and which it eats by means of a long ribbon-like tongue covered with numerous rows of hard teeth. The limpet is used as bait, and is eaten by the poorer classes of Scotland and Ireland. In tropical seas limpets attain an immense size, one species having a shell about a foot wide.

Limpopo (lim-pō'po), or CROCODILE RIVER, a river of Southern Africa, which rises in the Transvaal not far from Pretoria, flows northwest, then northeast, forming for a considerable distance the boundary of the Transvaal, then southeast into the Indian Ocean north of Delagoa Bay; length about 1100 miles.

Lim'ulus. See *King-crab*.

Linaceæ (lin-ā'se-ē), the flax family, a small nat. order of exogenous plants, scattered more or less over most parts of the globe, those in temperate and southern regions being herbs, while the tropical representatives are trees or shrubs. They are principally characterized by their regular flowers, with imbricate glandular sepals having a disc of five glands outside the staminal tube; the ovary is three to five celled, with two ovules in each cell; the albumen is fleshy; the leaves are simple, usually stipulate, rarely opposite. The tenacity of the fiber and the mucilage of the diuretic seeds of certain species of *Linum*, such as the common flax (*L. usitatissimum*), are well known widely, and utilized. See *Flax*.

Linacre (lin'ā-kēr), or LYNACRE, THOMAS, an eminent physician, born at Canterbury about 1460; died in 1524. After receiving his first education in his native town he entered Oxford University, afterwards proceeded to Italy, and on his return was intrusted by Henry VII with the education of Prince Arthur. He ultimately abandoned his medical practice for the church. In 1518 he founded the College of Physicians, of which he continued president till 1524. He made a Latin translation of the works of Galen.

Linaloe-wood (lin'a-lō), a wood obtained from tropical America (probably from a species of *Amyris*), yielding a fragrant oil used in perfumery.

Linares (lē-nā'rās), a town of Spain, province of Jaen, the chief town in a district rich in lead and copper mines. It has large smelting works and foundries and manufactories of explosives. Pop. 38,245.

Linares, a city of Mexico, State of Nuevo Leon, 65 miles s. s. of Monterey. Pop. 20,690.

Linares, an inland province of Chile, area 3942 square miles. It is fertile in the north but arid in the centre and has several volcanic peaks. Pop. 101,858. Linares, its capital city, has about 9000.

Linaria (li-nā'ri-a), a genus of monopetalous, dicotyledonous plants, of the nat. order Scrophulariaceæ.

Lincoln (ling'kon), a city of England and a county in itself, capital of Lincolnshire, 120 miles north

of London, situated on the Witham, and at the junction of several railways. It has been identified with the Roman Lindum Colonia, and at the time of William the Conqueror was a place of considerable strength and importance. The principal edifice is the cathedral, situated on a height (dating from the eleventh century, and restored since 1862), chiefly in the early English, but partly also in later styles, with a tower over 260 feet high, in which is the famous bell known as 'Great Tom of Lincoln,' cast in 1610, cracked in 1827, and since recast into a new bell. The other most conspicuous buildings are the Guild-hall or Stone-bow (of the time of Richard III), the remains of the castle which was founded by William the Conqueror, the old episcopal palace, and the fine old Roman arch spanning Hermin street, a theological college, and school of art, etc. The manufacture of agricultural implements and machinery forms the chief branch of industry. Pop. 57,294.—LINCOLNSHIRE is a large maritime county on the east coast, extending from the Wash to the Humber, which separates it from Yorkshire. Area, 2646 square miles. The surface is generally an uninterrupted plain, the greater portion of which lies below the level of the sea, being protected by embankments. In a few places the fens and marshes continue nearly in their natural state, but round the Wash a great deal of very fine land has been gained from the sea since the commencement of the nineteenth century and the embankments are gradually extending. In consequence of the richness of its pastures Lincolnshire has been long celebrated for its breed of horses, cattle and sheep. In the best parts of the fens and marsh under tillage the crops chiefly cultivated are oats and wheat. Principal rivers, Trent, Witham, Welland and Ancholme. The Witham has been made navigable from Boston to Lincoln; and the county is intersected by an intricate network of canals and dikes. Lincolnshire is divided into three parts—Holland, Kesteven, Lindsey. Pop. (1911) 564,013.

Lincoln, a city, capital of Logan county, Illinois, situated 28 miles N. E. of Springfield. It has the Lincoln University, founded in 1866, a State institution for feeble-minded children, and an Odd Fellows' orphans' home. Coal is mined, and mattresses, horse-collars, caskets, awnings, automobiles, corn-cutters, etc., are made. Pop. 10,892.

Lincoln, a city, capital of the State of Nebraska, and county seat of Lancaster county. It is a growing manufacturing city; the leading products consisting of flour, butter, structural steel, gas engines, silos, brooms, shirts, overalls, aprons. It is also a large wholesale center for groceries, drugs, hardware, farm machinery, etc. Here are the University of Nebraska and Nebraska College of Agriculture. The public buildings include capitol building, government building, city hall, commercial club, state prison, state hospital for insane, orthopedic hospital, library and state museum. Pop. 45,643.

Lincoln, a town of Providence county, R. I., 6 miles north of Providence. The manufacture of cotton fabrics is the chief industry. Pop. (1910) 9825.

Lincoln, ABRAHAM, the sixteenth president of the United States; born in Kentucky, February 12, 1809. He removed with his family in 1816 to Spencer county, Indiana, and for the next ten years was engaged in laborious work of various kinds, having only about a year's schooling at intervals. His own mother (born Nancy Hanks) taught him to read, and his stepmother urged him forward in his studies. He read and re-read in early boyhood the Bible, *Æsop's Fables*, *Pilgrim's Progress*, *Robinson Crusoe*, Weems's *Life of Washington*, and a history of the United States; and after this early course of reading, he read eagerly every book he could lay hands on, often borrowing from his neighbors. The poems of Burns and the plays of Shakespeare became his favorites. He also wrote, at first rude, course satires, crude verses and compositions on government, on temperance and other subjects of a kindred sort. At the age of nineteen he took a cargo down the river to New Orleans, where he got his first impressions of slavery, which he never forgot. On the breaking out of the Black Hawk war, in 1832, he joined a volunteer company, and as captain he served five weeks in the campaign. He next opened a country store, was appointed postmaster of New Salem, Illinois, began to study law, and at the same time turned amateur land surveyor. In 1834 he was elected a member of the Illinois legislature, to which he was again returned at the three following biennial elections, and in 1836 he was licensed to practice law. In 1846 he was elected a representative in Congress for the central district of Illinois, and voted steadily in Congress with the antislavery party. In 1854, he was unsuccessful in an attempt to enter the United States Senate. In 1858 he engaged in a famous controversy with Stephen A. Douglas, the Democratic candidate, in which he fixed his position regarding the institution of slavery and gained a national reputation. In the Republican national convention

held at Chicago in May, 1860, he was nominated as a candidate for the presidency, and after several ballots he gained a majority, and was eventually chosen unanimously. In the election of the following November he gained a majority over his several opponents and was elected President of the United States. The Southern States, exasperated at the defeat of their candidates, and alarmed at the aggressive antislavery policy which many of the leading Republicans had proclaimed their determination to follow, refused to acquiesce in Lincoln's election, and began one after another to announce their secession, and to organize the means of resisting the enforcement of the authority of the central government. Between the election of Lincoln in November, 1860, and his assumption of office on March 4, 1861, the secession movement made a rapid growth. Lincoln's intention was to use every means of conciliation consistent with the policy he deemed it essential to the national interest to pursue, but on one point his resolution was steadfast, to maintain the union of the States. Before his assumption of office the secession leaders were as resolutely determined on the other side. On the 4th of February the Southern Confederacy had been constituted, and on the 13th of April the first blow in the Civil war was struck by the capture of Fort Sumter, in Charleston harbor, by the Confederates. The events of the Civil war during the next four years in Lincoln's career belong to the history of the United States. Lincoln's persistence in raising and pouring in fresh troops after every disaster finally enabled the Federal government to subdue the secession. The toleration of slavery was always in Lincoln's opinion an unhappy necessity and when the Southern States had by their rebellion forfeited all claim to the protection of their peculiar institution, it was an easy transition from this view to its withdrawal. The successive stages by which this was effected—the emancipation of the slaves of rebels, and the offer of compensation for voluntary emancipation, followed by the constitutional amendment and unconditional emancipation without compensation—were only the natural steps by which a change involving consequences of such vast extent was reached. The determination of the Northern States to pursue the war to its conclusion on the original issue led to the reelection of Lincoln as president in 1864. The decisive victory of Grant over Lee on April 2, 1865, speedily followed by the surrender of the latter, had just afforded the prospect of an immediate termination of this long struggle, when, on the 14th of the same month, President Lincoln was shot in Ford's Theater, Washington, by an assassin named John Wilkes Booth, and expired on the following day.

Lincoln, BENJAMIN, soldier born at Hingham, Massachusetts, in 1733; died in 1810. He joined the patriot army in the Revolution, and in 1776 was made a major-general of militia. He was given the chief command of the Southern department in 1778, and defended Charleston against General Prevost in the spring of 1779. In October he, with Count D'Estaing, made an attack on Savannah, which proved unsuccessful. He was subsequently besieged by Sir Henry Clinton in Charleston, and forced to surrender in 1780. He was exchanged in 1781, commanded a division at Yorktown, and was deputed by Washington to receive the submission of Cornwallis and his army as a reparation for his capture at Charleston. He was chosen Secretary of War in 1781, was elected lieutenant-governor of Massachusetts in 1787.

Lincoln Highway, a great national road across the United States, from Atlantic to Pacific, with a length of about 3300 miles. It was projected in 1913, to be surfaced with concrete where practical, and progress has been made in every state which it is to traverse. The projectors, the Lincoln Highway Association, with headquarters at Detroit, Michigan, estimate that the cost will be $10,000,000. The highway is named after Abraham Lincoln.

Lincoln Memorial, a handsome edifice erected in memory of Abraham Lincoln in Potomac Park, Washington, D. C., at the river-side extremity of the axis passing through the Capitol and the Washington Monument. It is to contain a colossal statue of Lincoln, flanked by panels bearing his Gettysburg and Second Inaugural Addresses.

Lind, JENNY (MADAME OTTO GOLDSCHMIDT), singer, born in Stockholm in 1821; died in 1887. She received part of her musical training under Garcia at Paris; achieved her first success in Berlin in 1845, and subsequently was received with a great ovation in her native city of Stockholm. She made her first appearance in London in 1847, and later came to the United States. Here she married Herr Goldschmidt in 1851, and subsequently returned to Europe.

Linden (lin'den), a handsome forest tree. See *Lime*.

Lindisfarne. See *Holy Island*.

Lindley (lind'li), JOHN, botanist, born at Catton, Norfolkshire

in 1799; died in 1865. His father was the owner of a nursery garden, and he received his education at the grammar school of Norwich. He began at an early age to write on botanical subjects; received the appointment of assistant secretary to the Horticultural Society in 1822, and became professor of botany in London University in 1829. He was editor of the *Gardener's Chronicle* from 1841 until his death.

Lindsay (lin'zē), a city in the province of Ontario, Canada, on the Grand Trunk Railway, 70 miles N. E. of Toronto. It has an extensive trade in lumber and grain and various manufactures. Pop. 1911, 6964.

Lindsay, or LYNDSAY (lind'zē), SIR DAVID, an ancient Scottish poet, usually described as 'of the Mount,' an estate near Cupar, in Fife, was born about the year 1490; died in 1555. He studied in the University of St. Andrews, and in 1509 became page of honor to James V, then a boy. In 1528 he produced his *Dreme*, and in the following year presented his *Complaint to the King*. In 1530 he was inaugurated [illegible] king-at-arms, and knighted, and in 1531 sent on a mission to Charles V on his return from which he married. He soon afterwards published a drama entitled a *Satyre of the Three Estatis*, followed in 1536 by his *Answer to the King's Flyting*; and by the *History and Testament of Squire Meldrum*, in 1538. His last work, *The Monarchie*, was finished in 1553. For more than two centuries Lindsay was the most popular poet in Scotland. His satirical attacks on the clergy in some degree paved the way for the Reformation.

Lindsey (lind'zē), BENJAMIN BARR, reformer and judge, born at Jackson, Tennessee, in 1869; studied law and was admitted to the bar in 1894. He removed to Denver, Colorado, and since 1901 has been judge of the County Court and the Juvenile Court. He took a warm interest in the condition of youthful delinquents, endeavored to improve the method of confining them, and won an international reputation as the originator of improved and humanitarian methods of dealing with the criminal and law-defying young. He is the author of the Colorado Juvenile Court Law, and established a system of putting delinquents of this class upon their honor and sentencing them to the Industrial School at Golden, Colorado. Out of the hundreds thus dealt with only five broke their trust. He succeeded in having a contributory delinquency law passed, holding parents, employers, etc., accountable for neglect. He was candidate for governor of Colorado in 1906. He wrote *Problems of the Children*, *The Beast and the Jungle* and *The Rule of Emergency in Colorado*.

Line (lin), in military language, the infantry of an army as distinguished from cavalry, artillery, militia, volunteer corps, etc., but in some cases it is also applied to the ordinary cavalry regiments. *A ship of the line*, in naval nomenclature, is a ship of war large enough to have a place in the line of battle, and was formerly a ship with not less than two decks or two tiers of guns.

Linen (lin'en), cloth made of flax, had a very ancient origin and extensive use. On the early monuments of Egypt artistic representations of the various processes of linen manufacture have been found, and the fine linen fabric in which the Egyptians wrapped their embalmed dead still gives evidence of the skill which they possessed. The Jews took with them into Canaan a knowledge of the manufacture; Tyre, Sidon and Carthage seem also to have acquired the industry; while at an early period the manufacture of linen appears to have been common in Greece and Rome. In the middle ages linen and woolen were the chief articles of dress in all European countries, and among the Flemings in particular the flax manufacture rose to great importance. The linen manufacture was known in England, Ireland and Scotland from an early period. As early as the seventh century the Anglo-Saxon women were skilled in the weaving of this fabric, and fine linen was made in Wilts and Sussex in the thirteenth century. Since the extensive introduction of cotton, however, the linen industry has decreased in relative importance. The chief center of the manufacture in England is Leeds and neighborhood. In Ireland the manufacture of linen was well established in the seventeenth century; subsequently it declined; but lately it has again obtained a flourishing position, Belfast being the center of the manufacture. Dundee is the chief center in Scotland for linen (especially coarse fabrics) as well as the allied jute manufacture. Dunfermline is celebrated for its table linens. For the Continent, France, Belgium and Germany are the chief centers of linen manufacture. Little has been done in linen weaving in the United States, though some recent progress is being made. The machinery used both in spinning and weaving linen is in general, with the exception of some special adaptations, the same as that used for cotton. (See *Cotton Spinning* and *Weaving*, also *Flax*.) The chief varieties of linen now manufactured are: lawn, which is of fine qual-

ity and mostly produced in Ireland; plain cloths for skirtings, bedding, etc.; damasks, tablecloths, and other ornamental fabrics; and cambric, which is the finest of all linen fabrics.

Line of Beauty, a term used by some artists for an ideal line, frequently represented in the form of a very slender elongated letter S.

Ling (*Lota molva*), a species of sea-fish allied to the cod family (Gadidæ), and measuring from 3 to 4 feet in length. It abounds around the British

Ling (*Lota molva*).

coasts, and is caught with hook and line, and preserved in immense quantities in a dried state. From the beginning of February to May the ling is in highest perfection; the spawning season commencing in June.

Lingam (lin'gam), among the Hindus, the emblem of the male generative power of nature. It is worshiped either alone or in conjunction with the *yoni* or female generative power.

Lingard (lin'gärd), JOHN, an English historian, born at Winchester in 1771; died at Hornby in 1851. He was educated at the English College, Douai; established a new college at Crook Hall, near Durham, himself being vice-president, in 1794; became a priest in 1800 at Newcastle-on-Tyne; opened Ushaw Roman Catholic College in 1808, and in 1811 retired as priest to Hornby in Lancashire, where he died. He was offered a cardinal's hat by Leo XII; in 1839 he accepted a pension of £300 from the queen. His *Antiquities of the Anglo-Saxon Church* appeared in 1808, and his great work on *The History of England from the Invasion of the Romans to the year 1688* was first printed in 1819-25, and reached a fifth edition in 1850. Lingard's *History* is considered a standard work from the Roman Catholic standpoint.

Linguaglossa (lēn'gwa-glos-sa), a town of Sicily, on the northeast slope of Etna. Pop. 13,121.

Lingula (ling'gū-la), a genus of molluscs of the class Brachiopoda and family Lingulidæ, a family that has survived with but little change since the early Silurian period. These molluscs are one of the few examples of pedunculated bivalve shells. The members of the genus inhabit the Indian Archipelago and the Australasian seas.

Liniment (lin'i-ment), in medicine, a species of soft ointment of a consistence somewhat thinner than an unguent, but thicker than oil. The term is also applied to spirituous and other stimulating applications for external use.

Link, in land-measuring, a division of Gunter's chain, having a length of 7.92 inches. The chain is divided into 100 links, and is 66 feet in length. 100,000 square links constitute an imperial acre.

Linköping (lin-cheup'ing), a town of Sweden, capital of the lin of East Gottland, in a fertile district on the Stang, near Lake Roxen. The town has a handsome cathedral, a library rich in rare editions of the Bible, episcopal castle, etc. Pop. 14,552.

Linlithgow (lin-lith'gō), a borough of Scotland, capital of Linlithgowshire, 17 miles west of Edinburgh, in a hollow along the southern bank of Linlithgow Loch. It consists principally of one irregular street, about one mile long, lying east and west. The principal buildings of interest are the palace, now a ruin, where James V and Mary Queen of Scots were born; and the church of St. Michael, an ancient Gothic edifice. It was in the High street of Linlithgow that Hamilton of Bothwellhaugh assassinated the Regent Murray in 1570. Pop. 4279.—The County of LINLITHGOW, or WEST LOTHIAN, is bounded by the Firth of Forth, Edinburghshire, Stirling and Lanark; area, 120 square miles. This county is one of the richest in Scotland in minerals, including coal, shales, ironstone, freestone, limestone. The soils are generally strong and well drained, but in the southwest parts of the county there is a considerable extent of thin, boggy ground. The principal manufacture is that of paraffin-oil, which is carried on at Bathgate, Uphall, and other places. Principal rivers, Almond and Avon. Principal towns, Linlithgow, Bathgate, Borrowstounness and Queensferry. Pop. 65,708.

Linnæa (lin-nē'a), a genus of plants of the nat. order Caprifoliaceæ (honeysuckles). It contains but one species (*L. borealis*), a creeping evergreen plant found in woods and in mountainous places in Scotland and other northern countries, including North America as far south as Maryland, bearing two beautiful drooping fragrant bell-shaped pink flowers on each flower-stalk. The plant was an especial favorite with

Linnæus, and was named in honor of him by Gronovius.

Linnæan Society, a society instituted in London in 1788 by Dr. J. E. Smith, and incorporated in 1802, for the promotion of the study of all departments of botany and zoölogy. It has an excellent library, a museum, and herbarium, the nucleus of which were formed by the collections of Linnæus himself. Fellows take the initials F. L. S.

Linnæus. See next article.

Linné (lin'nā), KARL VON, commonly called LINNÆUS, the greatest botanist of his age, was born at Rashult, Sweden, in 1707, and died at Upsala in 1778. He was the son of a clergyman, who had him educated at the grammar school and the gymnasium of Wexiö. He showed an early interest in botany; entered the University of Lund, where his botanical tastes were encouraged; and removed to Upsala in 1728, where he undertook the supervision of the botanic garden. Here he made the acquaintance of the botanist Rudbeck, whose assistant he became. Aided by the Academy of Sciences at Upsala, Linne made a journey through Lapland, the result of which was shown in his *Flora Lapponica*, published 1735. In this year he went to the University of Harderwyk, in Holland, and took an M.D. degree; afterwards visited Leyden, where he published the first sketch of his *Systema Naturæ* and *Fundamenta Botanica*. In 1736 he visited England, went to Paris in 1738, and afterwards settled in Stockholm as a physician. He became professor of medicine at Upsala in 1741, and then of botany and natural history; was made a knight of the Polar Star with the rank of nobility; and died on his estate near Upsala from apoplexy. The great merit of Linné as a botanist was that he arranged plants on a simple system of sexual relationship and prepared the way for the more natural and satisfactory classification which has superseded the Linnæan system. The system of naming genera and species devised by him is still in common use. Nor must it be forgotten that he was eminent not only in botany, but in all the sciences of his time. His chief works besides those already mentioned were: *Genera Plantarum* 1737, *Classes Plantarum* (1738), *Flora Suecica* (1745), *Fauna Suecica* (1746), *Philosophia Botanica* (1751), and the *Species Plantarum* (1753).

Linnell (lin'el), JOHN, artist, born at London in 1792; died in 1882. He was a student at the Royal Academy; a pupil of Benjamin West and the friend of William Blake, whose portrait he painted. His earlier reputation is associated with portraiture, but in his later period his fame became identified with landscape, and more especially the scenery of Surrey. His sons, JAMES THOMAS LINNELL and WILLIAM LINNELL, are also well-known artists.

Linnet (lin'et), a small singing bird of the finch family, *Fringilla linota* or *cannabina*. Its general plumage is brownish, the top of the head and breast being reddish in the breeding season. It is one of the commonest of British birds, everywhere frequenting open heaths and commons, and breeding in the furze and other bushes. They are cheerful and lively birds, and very sweet and pleasing songsters. Called also provincially *Lintie* and *Lintwhite*.

Linoleum (li-nō'le-um), a preparation of linseed-oil with chloride of sulphur, by which it is rendered solid and useful in many ways. When rolled into sheets it is used as a substitute for india-rubber or gutta-percha; dissolved it is used as a varnish for waterproof textile fabrics, table-covers, felt carpets, and the like; as a paint it is useful both for iron and wood, and for ships' bottoms; as a cement it possesses some of the qualities of glue; vulcanized or rendered hard by heat it may be carved and polished like wood for mouldings, knife-handles, etc.; and mixed with ground cork and pressed upon canvas it forms floor-cloth.

Linotype (li'nō-tīp), a recently invented printing machine, in which types are discarded, and matrices used instead, these being brought to the proper places by touching corresponding keys on a keyboard similar to that of a typewriter, the rows of matrices being then automatically filled with molten metal so as to produce solid bars or lines of type, and then automatically returned to their places. It has very largely superseded the hand-setting of type, enabled the voluminous newspapers of to-day to be issued and considerably cheapened the price of books.

Linseed-oil (lin'sēd), the oil got from the seeds of flax either by pressure in the cold or by heating to about 200° Fahr. It is of a pale to dark yellow color; may or may not have a smell; has specific gravity from 0.928 to 0.94; and remains liquid even at zero Fahr. Linseed-oil is largely used in the arts, for painting, for printer's-ink, etc.; and in medicine, especially for burns. *Linseed-cake* is the solid mass or cake which remains when oil is expressed

from flaxseed. It is much used as food for cattle and sheep, and is called also *Oil-cake.*

Linstock (lin'stok), a pointed staff with a crotch or fork at one end to hold a lighted match, formerly used in firing cannon.

Lint, in surgery, is the scrapings of fine linen, used by surgeons in dressing wounds. Lint made up in oval or orbicular form is called a *pledget;* if in a cylindrical form, or in shape of a date or olive stone, it is called a *dossil.*

Lintel (lin'tel), in architecture, a horizontal piece of timber or stone over a door, window, or other opening, to discharge the superincumbent weight.

Linton, a city in Greene county, Indiana, 53 miles N. E. of Vincennes. It is in a farming section, with coal mines in its vicinity. Pop. 5906.

Linum (li'num), the flax genus of plants, which gives its name to the nat. order Linaceæ. There are about eighty species, herbs or rarely small shrubs, chiefly found in the temperate and warmer extra-tropical regions of both hemispheres. Few are of any importance, except the flax plant (*L. usitatissimum*), from which linen fabrics are made. When scraped, linen forms *lint* (q. v.), from which surgical dressings are made. *Tow* is the term given in textile manufacture to the short fibers of flax which are separated in the course of preparation. The seeds of the linum are called *linseed;* these contain much mucilage, and by compression in the cold or by heating to about 200° Fahr. a valuable oil is produced, much used in the arts as well as for medicinal purposes (see *Linseed-oil*). After the oil is expressed, the cake which remains, known as *oil-cake* (q. v.), is much used as food for cattle. When powdered it is termed *linseed meal* and forms the basis of poultices.

Linz (lints), the capital of Upper Austria, situated on the right bank of the Danube, 117 miles W. of Vienna. It is defended by a circle of detached forts extending over a circuit of 9 miles. It has an old cathedral, a new cathedral, provincial parliament house, castle, town house, bishop's palace, etc. The manufactures consist chiefly of woolen, linen, silk and cotton goods, machinery, hardware, etc. There is an extensive trade on the Danube. Pop. (1910) 67,810.

Lion (li'un; *Felis leo*), a quadruped of the cat genus, the most majestic of all carnivorous animals, distinguished by its tawny or yellow color, a full flowing mane in the male, and a tufted tail with a sort of sharp nail at the end of it. The largest lions are from 8 to 9 feet in length. The period of gestation is five months; one brood is produced annually, with from two to four at a birth, and the mother nourishes the whelps for about a year. The mane of the male lion begins to grow when it is

Lion (*Felis Leo*)

three years old; the adult age is reached about six or seven; and the extreme age is about twenty-two, although authorities differ from this estimate. The lion is a native of Africa and parts of Western and Central Asia. It preys chiefly in the night and on live animals, avoiding carrion, unless impelled by intense hunger. It approaches his prey with a stealthy pace, crouching when at a proper distance, when it springs upon it with fearful velocity and force. The whole frame is extremely muscular, the foreparts being particularly so, giving with the large head, flashing eye and copious mane, a noble appearance to the animal, which has led to its being called the 'king of beasts,' and to fancies of its noble and generous nature which have no real foundation. Of the African lion there are several varieties, as the Barbary lion, Gambian lion, Cape lion. The Asiatic varieties are generally smaller and may want the mane, as the maneless lion of Gujerat.

Lipari Islands (lip'a-rē, or lē'pa-rē), a cluster of volcanic islands in the Mediterranean, which take their name from the principal one of the group, about 24 miles from the N. coast of Sicily. Lipari, the largest, is well cultivated, producing figs, grapes and raisins, sulphur, etc. It is about 15 miles in circumference, and has a population of 13,000. On the eastern coast is situated a town of the same name, containing a cathedral; pop. 5000. The other islands are Stromboli, Panaria, Vulcano, Salina, Alicudi and Filicudi, with two or three smaller ones. Stromboli is mainly composed of an incessantly active volcano. Pop. of the group, 20,224.

Lipetsk (lye'petsk), a town of Russia, in the government of Tambov. Pop. 16,353.

Lippe (lip'pé), or incorrectly LIPPE-DETMOLD, a principality of north Germany, bounded chiefly by Rhenish Prussia and Hanover; area, 469 square miles. It lies on the Teutoburger Wald, and drains into the Weser, the Ems and the Rhine. Over half of the surface is arable, more than a fourth under wood. There are some valuable saline springs. The principal towns are Detmold, Lemgo and Horn. Lippe is a member of the German Empire, and sends one member to the Bundesrath and one to the Reichstag. A very large majority of the inhabitants are Protestants. Pop. (1910) 150,479.

Lippi, FRA FILIPPO, an Italian painter, born in Florence about 1412; died at Spoleto in 1469. He was placed in a monastery at Florence, where he studied and showed a great capacity for drawing, and where he painted, it is said, a fresco in one of the cloisters. He left the monastery about 1432, was for some time a slave in Barbary, on being set at liberty returned to Italy and painted at Florence, Prato, and finally, Spoleto. His most famous paintings are a *Coronation of the Virgin*, Florence; frescoes on the stories of St. Stephen and John the Baptist in the Duomo of Prato; and the *Death of St. Bernard*, in the National Gallery, London.—FILIPINO LIPPI, an Italian painter, and the reputed son of the former, was born at Florence about 1457, and died there 1504. Most of his paintings are to be seen in Florence.

Lippia (lĕp'i-a), a genus of plants, nat. order *Verbenaceæ*. They are shrubs or herbs numbering about 100 species, found in all warm regions; especially abundant in America.

Lippincott (lip'in-kot), SARAH J., author, born at Pompey, N. Y., about 1825; died in 1904. Wrote under pen name of 'Grace Greenwood.'

Lipsett (lip'set), LOUIS JAMES (1874-1918), a Canadian general who commanded the 3d Canadian division in the European war, 1914-18.

Lipton (lip'tun), SIR THOMAS JOHNSTONE, a British merchant, born in Glasgow of Irish parentage in 1850; knighted in 1898 and created a baronet in 1902. He has made three unsuccessful attempts to win the America Cup from the New York Yachting Club and was deterred from a fourth trial in 1914 by the outbreak of war in Europe. See *America Cup*.

Liquid Gases, gases that have been brought into a liquid state by the combined effect of lowering their temperature and expanding them sufficiently. *Liquid air* at a temperature of 192° C. has a density of 0.91. It is a non-conductor of electricity. When properly protected from material heat, and subjected to high exhaustion, liquid air becomes a stiff, transparent, jelly-like mass, a magma of solid nitrogen containing liquid oxygen, which may be extracted from it by means of a magnet or by rapid rotation of the vacuum vessel. The temperature of this solid under a vacuum of about 14 mm. is −216° C. At the still lower temperature attainable by the aid of liquid hydrogen, it becomes a white solid with a faint blue tint, in this respect resembling liquid oxygen. *Liquid hydrogen* is the lightest liquid known, its density being 0.07. *Liquid oxygen* has a density of 1.14, has a slight bluish color, and is strongly magnetic. *Liquid Nitrogen* forms a colorless liquid at —3.19° Fahrenheit, when its density is 0.80. *Helium* forms likewise a colorless liquid, boiling at —452° Fahrenheit, with a density of 0.154. *Liquid fluorine* is a yellow liquid, of density 1.14. Liquid gases are used in laboratories for drying and purifying gases, creating high vacua, etc.; but they are too expensive to be used as refrigerants, motive forces, etc.

Liquation (li-kwā'shun), or ELIQUATION, the process of separating by a regulated heat an easily fusible metal from an alloy in which is a metal difficult of fusion. Thus in the refining of tin to remove slag, iron, copper and other metals, the ingots are heated in a reverberatory furnace to a temperature just sufficient to melt the tin, while the impurities are left behind on the hearth.

Liqueur (li-keur'); the French name, a palatable spirituous drink composed of water, alcohol, sugar, and an aromatic infusion extracted from fruits, seeds, etc. The best-known liqueurs are absinthe, anisette, chartreuse, curaçoa, maraschino, kümmel and noyau.

Liquidation (li-kwi-dā'shun) indicates the winding up of any business, more especially a joint-stock company. It may apply to insolvent firms that voluntarily wish to close up their business.

Liquorice (lik'u-ris), a name for herbs of the genus *Glycyrrhiza*, belonging to the nat. order *Leguminosæ*, and growing in S. Europe, Asia and Africa. *G. glabra* is a perennial plant with herbaceous stalks and bluish papilionaceous flowers. The well-known liquorice juice, used as a demulcent and expectorant, is extracted from the root as well as from that of others. *Indian*

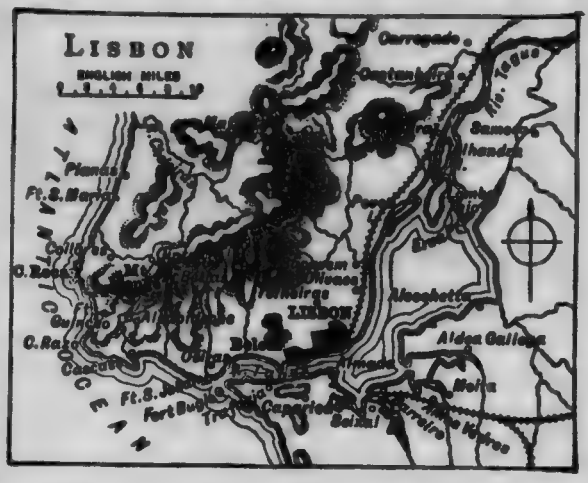
liquorice is *Abrus precatorius*. See *Abrus*.

Lira (lē'ra; from the Latin *libra*, pound) is the name given to an Italian silver coin of the value of about 19 cents. It corresponds to the French franc, and is equal to 100 centesimi.

Liria (lē're-ä), a town of Spain, in the province and 17 miles northwest by west of Valencia, on the left bank of the Guadalquivir. Pop. 8839.

Liriodendron (lir-i-ō-den'dron), a genus of North American trees belonging to the nat. order Magnoliaceæ, and containing only one species, the tulip-tree (L. *tulipifēra*). See *Tulip tree*.

Lisbon (liz'bun; Portuguese, *Lisboa*), the capital and principal seaport of Tagus, about 9 miles above its mouth. It is built on and at the foot of a succession of hills, in the form of an amphitheater, and the churches, convents and houses, of a dazzling whiteness, have an imposing effect when viewed from the river. The streets of the older parts in general are steep, narrow, crooked, badly paved and filthy; but the more modern parts of the town are regular and well built. The chief open space is the Praça do Commercio, a large and handsome square, surrounded by public buildings. The western quarter of the city, called Buenos Ayres, is airy and pleasant, and chiefly occupied by foreigners. The town of Belem, still farther to the west, forms a sort of suburb to Lisbon. Above it stands the royal palace of Ajuda, a conspicuous edifice of white marble. Among the chief buildings are the castle of St. George or citadel, the cathedral, the church do Coraçao de Jesus, the custom-house and other government buildings on the Praça do Commercio, the town hall, etc. But the most remarkable specimen of architecture of which Lisbon can boast is the aqueduct which conveys water to the city from springs about 10½ miles distant. The scientific and literary institutions comprise the Royal Academy of Sciences, Polytechnic School, National Museum and Picture Gallery, and Public Library, containing about 400,000 volumes. The harbor is one of the finest in the world, and the quays extend between 2 and 3 miles along the bank of the river. The exports consist chiefly of wine, oil and fruit; and the principal imports are cotton, cotton tissues, sugar, grain, coal, tobacco, coffee, etc. The manufactures are tobacco, cotton, wool, silk, paper, chemicals, soap, etc. Lisbon is a place of remote antiquity, its earliest name being *Olisipo*. In 1755 it was visited by an earthquake, which threw down a considerable portion of the city, and destroyed above 30,000 of its inhabitants. It was taken by the French in 1807, but resisted an attack by Masséna in 1809. It was the center of the revolution of 1910, by which Portugal was converted from a monarchy into a republic. Pop. (1910) 435,359.



Lisburn (lis'burn), a town of Ireland, in the Counties of Antrim and Down, 8 miles southwest from Belfast. It has a cathedral church of the united dioceses of Down, Connor and Dromore, which contain a monument to Jeremy Taylor, who died here in 1667. Flax spinning and weaving, and the manufacture of thread and muslin, employ the greater number of the inhabitants. Pop. 11,460.

Lisieux (liz-yes), a town of France, department of Calvados, on the Touques, 27 miles E. S. E. of Caen. Its principal edifices are a fine Gothic church of the twelfth century, and a former episcopal palace. The manufactures consist of muslin, broadcloth, flannel, etc. Pop. (1906) 15,194.

Liskeard (lis-kärd'), a municipal borough of England, county of Cornwall, 18 miles northwest of Plymouth. There are tin, lead and copper mines in the vicinity. Pop. 4371.

Lismore (liz-mor'), an island of Scotland, off the west coast of Argyle, and forming part of that county, at the entrance of Loch Linnhe; area, 15

square miles. In ancient times Lismore was the residence of the bishops of Argyle and the Isles, and the remains of their palace are still seen.

Lissa (lis'sä), an island belonging to Austria, in the Adriatic, off the coast of Dalmatia; length, 10 miles; breadth, 5 miles. From 1810 to 1815 it was held by the British, who built some fortifications and defeated all the attempts of the French to dislodge them. Pop. 9918. The town of Lissa, or San Giorgio, on a bay on the northeastern side of the island, was attacked by the Italian fleet on August 18 and 19, 1866, and on the 20th an engagement took place between the Italian and Austrian fleets, in which the Italians were defeated. Pop. 9918.

Lissa, a town of Prussia, province of and 44 miles s. s. w. of Posen. It has a castle and manufactures woolens, leather and tobacco. Pop. (1906) 16,021.

Lister (lis'tèr), JOSEPH, LORD, an English surgeon, was born at Upton, Essex, in 1827. From 1860 to 1869 he was professor of surgery in Glasgow University; from 1869 to 1877 professor of clinical surgery in the University of Edinburgh; subsequently in King's College, London. His name is more especially connected with the successful application of the antiseptic treatment in surgery, which inaugurated a new era in this branch of medical science. He received in consequence numerous honors, was made a baronet in 1883 and a peer in 1897. He published various papers on *Surgical Pathology*, etc. He died February 11, 1912.

Liston (lis'tun), JOHN, comedian, the son of a London watchmaker, born in 1776; died in 1846. He made his first appearance at the Haymarket in 1806, transferring his services to Drury Lane in 1823, and attaching himself to Madame Vestris' company at the Olympic from 1831 to 1837. Among his most famous characters were *Mawworm* in the *Hypocrite* and *Paul Pry*.

Liston, ROBERT, a Scottish surgeon, born in 1794; died in 1847. He studied at Edinburgh College, became one of the house surgeons at the Royal Infirmary there in 1815; delivered lectures on anatomy and surgery, and in 1833 published his *Principles of Surgery*. The following year he removed to London as surgeon to the North London Hospital, and became professor of clinical surgery in University College, an office which he retained till his death. He was one of the most eminent surgeons of his time.

Liszt (list), ABBÉ FRANZ, distinguished pianist and composer, was born in Hungary in 1811, and died in 1886. He made his first public appearance in his ninth year; studied in Vienna and Paris; produced an opera in 1825, and became director of the Court Theater at Weimar in 1849. This gave him the opportunity to introduce the music of Wagner, Berlioz, Schumann, and the writers of what is known as 'the music of the future.' In 1861 he took up his residence in Rome, where he joined the priesthood. In 1870 he became director of the Conservatory of Music at Pest. His chief works are the *Faust* and *Dante* symphonies, and the oratorios *St. Elisabeth* and *Christus*.

Litany (lit'a-ni; from the Greek *litaneia*, supplication), a term generally applied to a series of short prayers or supplications together forming one whole. The term was used by the early church to denote any form of prayer, and it was not until the fifth century that litanies came specifically into use. Litanies became afterwards very common, and every saint of the Roman calendar had his litany. The best-known litany at the present day is that of the Anglican Church.

Litchfield. See *Lichfield*.

Litchfield (lich'fēld), a city of Montgomery county, Illinois, 45 miles s. of Springfield. It has coaling and oil industries, nour mills and manufactures of wind-mills, tanks, mine engines, bottles, etc. Pop. 7000.

Litchi, or LEE-CHEE (*Dimocarpus* or *Nephelium Litchi*), the fruit of a tree belonging to the natural order Sapindaceæ, a native of the south of China. The tree is of a moderate size, with brown bark, the leaves large, and the fruit is produced in bunches, which are pendant from the extremities of the twigs. The litchi is a red or green berry, about 1¼ or 2 inches in diameter, with a tough, thin, leathery coat, and a colorless half-transparent pulp, in the center of which is a single brown seed. The pulp is slightly sweet, and grateful to the taste.

Lit de Justice (lē dē jüs-tēs; literally 'bed of justice'), was formerly a solemn proceeding in France, in which the king, with the princes of the blood royal, the peers, and the officers of the crown, state, and court, proceeded to the parliament, and there, sitting upon the throne (which in the old French language was called *lit*), caused those commands and orders which the parliament did not approve to be registered in his presence. The last lits de justice were held by Louis XVI in 1787 and 1788.

Literature. See various countries, *Drama*, *Novel*, etc.

Litharge (lith'arj), the yellow or reddish protoxide of lead partially fused (PbO). It is extensively used in the manufacture of glass, of enamels, of artificial gems, of lead plaster and lead soap, of sugar of lead, white and red lead, and other compounds. See *Lead*.

Lithia (lith'i-a; Li_2O), the only known oxide of the metal lithium, which was at first found in a mineral called petalite. It is of a white color, very soluble in water, acrid, caustic, and acts on colors like other alkalies.

Lithic Acid. See *Uric Acid*.

Lithium (lith'i-um), symbol Li, atomic weight 7, the metallic base of lithia, which base was obtained by Sir H. Davy in the electrolysis of fused lithium chloride. It is of a silver-white luster but quickly tarnishes in the air. Lithium may be cut with a knife, but it is scarcely so soft as potassium or sodium; it fuses at 180° C., and takes fire at a somewhat higher temperature. Lithium floats upon rock oil; it is the lightest of all known solid bodies; sp. gr. 0.5936. It forms salts analogous to those of potassium and sodium. Compounds of lithium are used in pyrotechny on account of the splendid red color they impart to flame. In medicine the carbonate is employed especially as a solvent for uric acid, to prevent the formation of calculi and to remove it from the system in gout. Effervescing lithia water is sometimes used in place of soda or potash water. Citrate of lithia is also employed. Its therapeutic properties are similar to those of the carbonate.

Lithography (li-thog'ra-fi), the art of drawing upon and printing from stone. The facility with which this is accomplished arises from the antagonistic qualities of grease and water. The processes of the art depend on the adhesion to a grained or polished stone of a certain greasy composition which forms the lines of the drawing, etc.; on the power acquired by those parts penetrated by the greasy composition of attracting and becoming covered with a specially prepared ink; on the interposition of water, which prevents the ink adhering to the parts not impregnated with the grease; and on pressure, which transfers to paper the greasy tracings or drawings. It is the invention of Alois Senefelder, a native of Prague (1771-1834). At first the progress of the art was slow; but latterly its developments have been rapid, so that Germany, France and Great Britain vie with each other in the artistic beauty of their lithographic productions. The materials, instruments and methods of this art are as follows:—

The *lithographic stones*, first used by Senefelder, have proved to be the most suitable for the purposes of lithography. This stone, which is found in the district of Kellheim, Bavaria, is a species of slaty limestone; its color in the best quality is pale-yellowish drab, and for printing purposes its thickness must be from 1½ to 4 inches. In preparing stones for the printer they are squared, leveled, ground and polished.

Lithographic *ink* is made of wax, white soap, tallow, shellac, mastic and lampblack. What are called *chalks* are made from much the same materials; these ingredients being subjected to heat until they are fused, poured out on a slab to cool, and then cut into the required sizes.

There are various styles in which drawings on the stone are executed. *Drawing on the smooth stone* is executed with steel pens and sable-hair brushes. The design, etc., is drawn on the stone in reverse, after which it is slightly etched with dilute acid. In *chalk drawing* the surface of the stone is roughed or grained, after which the drawing is traced upon the stone. The tinting or shading follows. When completed the drawing is etched, after which it is put into the hands of the printer for printing. In *engraving on stone* the stone is first prepared with a solution of acid and gum. It is then washed with water, and a dry red or black powder rubbed over it. The drawing is produced by lines scratched through this ground into the stone. These lines are then spread with linseed-oil, and afterwards *charged* with printing ink, from which impressions are taken. *Etching on stone* is in most respects similar to etching on copper. The stone is prepared in the same manner, the biting-in is effected with dilute acetic acid, and the lines filled in with printing ink. The method of drawing directly on the stone has been largely superseded by the use of prepared paper, both grained and smooth, on which the drawing is executed, and afterwards transferred to the stone. *Tinting and chromo-lithography* is much practiced in the reproduction of works of an artistic character. See *Color-printing* and also *Photo-Lithography*, under *Photography*.

In the year 1850 steam-power began to supersede manual labor in driving the lithographic press, and afterwards a cylinder machine was introduced, which from time to time has been greatly improved.

This machine, running at 500 revolutions in the hour, can produce good work, but for printing fine chalk drawings of large size the hand-press is still preferred. The number of good impressions that can be taken from one drawing or transfer ranges from 500 to 5000; chalk drawings producing few and ink drawings many copies. The drawing or writing can also be preserved good on the stone for any length of time by rolling it with a special kind of ink and covering it with gum mixed with sugar-candy. For similar purposes zinc has been treated in much the same manner as stone. See *Zincography*.

Lithophagi (li-thof'a-gi), or LITHOPHAGIDÆ, a name applied to species of bivalve and univalve mollusca, etc., that penetrate stones and masses of corals.

Lithospermum. See *Gromwell*.

Lithotomy (lith-ot'o-mi), in surgery, the technical name for the operation popularly called cutting for the stone. As usually performed it consists in cutting through the perineum in front and to the left of the anus, so as to reach and divide the urethra and neck of the bladder where it is surrounded by the prostate gland. A grooved and curved staff is introduced into the bladder first, and then the incision is made in the perineum to reach the bladder, the groove in the staff serving as a guide to the knife. When thus performed, the operation requires seldom more than three minutes, and in favorable cases the wound heals in the course of a month.

Lithotrity (lith-ot'ri-ti), in surgery, the operation of crushing a stone in the bladder into fragments of such a size that they may be expelled by the urethra. The instrument by which the stone is broken up is introduced in the same manner as a catheter or sound into the bladder, and after catching the stone either crushes, bores, or hammers it to pieces. The instrument, which is called a lithotrite, has two movable blades at the extremity, which are brought together to crush the stone by means of a powerf l screw.

Lithuania (lith-u-ā'ni-a), a region in Eastern Europe which formed a grand-duchy in the eleventh century; became united to Poland in the fourteenth century; and at the dismemberment of that kingdom, in 1773-95, was nearly all appropriated by Russia, now forming the governments of Mohilev, Vitepsk, Minsk, Vilna and Grodno; area about 160,000 square miles, of which 6700 are in Prussia. The Lithuanians are a race of people closely akin to the Letts. They are fair-haired, blue-eyed and light-skinned; of mild disposition, and chiefly occupied in agriculture. Their language is akin to the Lettic and Old Prussian, and forms with these the Lithuanian or Lettic branch of the Aryan family of tongues. Their literature consists chiefly of popular songs and hymns, religious works, tales, etc.

Litmus (lit'mus), or LACMUS, a peculiar coloring matter procured from *Roccella tinctoria* and some other lichens. Paper tinged blue by litmus is reddened by the feeblest acids, and hence is used as a test for the presence of acids; and litmus paper which has been reddened by an acid has its blue color restored by an alkali.

Litre (lē-tèr), LITER, the French standard measure of capacity in the decimal system. The litre is a cubic decimetre; that is, a cube, each of the sides of which is 3.937 English inches; it contains 61.028 English cubic inches; the English imperial gallon is equal to 4½ litres, or more exactly 4.54345797 litres.

Littleborough (lit'tl-bur-ō), a large and populous village of Lancashire, England, 9½ miles N. E. of Rochdale. The inhabitants are chiefly employed in cotton and woolen manufactories, fire-brick works and collieries. Pop. (1911) 11,705.

Little Christians, a sect of Russian dissenters claiming to be the possessors of a special revelation.

Little Falls, a city, capital of Morrison county, Minnesota, on the Mississippi River, 106 miles N. W. of St. Paul. It has saw, pulp and paper mills, and other industries. Pop. 6078.

Little Falls, a city of Herkimer county, New York, on the Mohawk River and Erie Canal, 21 miles from Utica. The river here passes through a narrow gorge and falls 44 feet, yielding abundant water power. It has large knitting mills, woolen and paper mills, etc., and has an important trade in cheese and other dairy products. Pop. 12,273.

Littlehampton (lit'tl-hamp-tun), a maritime town of England, county of Sussex, 18 miles west of Brighton, at the influx of the Arun into the English Channel. It has become a fashionable sea-bathing resort. Pop. (1911) 8351.

Little Rock, a city, capital of Arkansas, on the right bank of the Arkansas, here navigable, 250

miles from its mouth. It stands on a rocky bluff, rising about 50 feet above the river. It has an old statehouse, a $2,000,000 capital and other state and educational institutions; is an important shipping point for cotton, cotton-seed oil and lumber products. Its industries are cottonseed-oil mills, shops, cooperage and railroad repair shops. Pop. 53,811.

Littleton, or LYTTLETON (lit-tl-ton), THOMAS, a celebrated English judge, born at the beginning of the fifteenth century; died in 1481. In 1455 he went the northern circuit as judge of assize, and was in 1466 appointed by Edward IV one of the judges of the common pleas. His work on *Tenures*, with the commentary of Coke, was at one time the principal authority on real property in England.

Littorina. See *Periwinkle.*

Littré (lē-trā), MAXIMILIEN PAUL EMILE, a French philologist, was born at Paris in 1801, and died there in 1881. He originally studied medicine, then took up philosophy and philology, adopted the positive philosophy of M. Comte, and published works connected with this subject, as well as works connected with medicine, including a translation of Hippocrates. In 1862 he brought out his *Histoire de la Langue Française.* His chief work, a dictionary of the French language, was begun in the following year, and completed with supplements in 1877. It is a monument of erudition and industry, and its success was prompt and complete. In 1871 he became a representative in the National Assembly, in 1875 was named senator for life, and next year was admitted a member of the French Academy.

Littrow (lit'trō), JOSEPH JOHANN VON, an Austrian astronomer, born in 1781; died in 1840. He became joint-director of the observatory of Buda, and in 1819 director of the observatory of Vienna. He published numerous books on astronomy, the best known of which are *Die Wunder des Himmels* (1834), and *Theoretische und praktische Astronomie* (1822-26).

Liturgy (lit'ur-gi), a special series of prayers, hymns, pieces of Scripture, or other devotional matter, arranged and prescribed for use in worship; or in a narrower sense a prescribed service for the celebration of the eucharist; hence in the Roman Catholic Church equivalent to the mass or service contained in the Missal. There are a number of ancient liturgies connected with various places or names of various persons, but there seems to have been no written liturgy earlier than the fifth century. The chief liturgical books in the Roman Catholic Church are the *Missal* and the *Breviary* (which see), both in Latin. In 1523 Luther drew up a liturgy, or form of prayer and administration of the sacraments, which in many points differed but little from the mass of the Church of Rome. He did not, however, confine his followers to this form, and hence every country in which Lutheranism prevails has its own liturgy. Calvin prepared no liturgy; but his followers in Geneva, Holland, France, and other places drew up forms of prayer, of which the Genevese and the French are the most important. In England before the Reformation the public service of the church was performed in Latin, and different liturgies were used in different parts of the kingdom. The most celebrated of these were the *Breviary* and *Missal secundum usum Sarum* (that is, as used at Salisbury), compiled by the Bishop of Salisbury about 1080. The English Book of Common Prayer dates from the reign of Edward VI. (See *Common Prayer.*) It was based on the Roman Breviary. In the portions of Scripture contained in the Prayer Book the authorized version was later adopted, except in the Psalms, which are according to Coverdale's Bible. The liturgy of the Episcopal Church in Scotland is the same as that of the Church of England, except that there is a different communion office, which, however, is used only in some of the Scotch churches. The Kirk of Scotland, or the Scotch Presbyterian Church, has no liturgy, the Directory for the Public Worship of God being only certain general rules for the conduct of public worship. The Book of Common Prayer of the Protestant Episcopal Church in the United States was adopted in 1789 with some minor deviations from the English.

Liutprand, or LUITPRAND (lūt'prand), historian, prelate and diplomatist, was born at Pavia about 920, and died at Cremona about 972. From being page of King Hugo of Italy he rose to be chancellor under his successor, Berengarius. He was then patronized by the Emperor Otto of Germany and appointed Bishop of Cremona. He was employed as an ambassador on several important missions, and had in this way an excellent opportunity of studying the events of the period. Besides an interesting narrative of a mission to Constantinople, he has left us a History of Otto; and his *Antapodosis*, a history of Europe in six books, from 886 to 950. These works are the chief historical authority for that period.

Livadia (liv-a-dē'a), the name given under the Turkish rule to Northern Greece.

Livadia, or LEBADEA, a town of Greece, 52 miles northwest of Athens. It was of note in ancient times and flourished in the middle ages and under Turkish rule, but has declined. It is poorly built, and consists of narrow, ill-paved streets. Pop. 6494.

Live Oak. See *Oak.*

Liver (liv'er), the glandular structure, which secretes the bile. This gland is not confined to the Vertebrate animals, all of which—save the Amphioxus or lancelet—possess a well-developed liver, but is found in many Invertebrata. In man the liver is part of the alimentary apparatus, and is situated just below the diaphragm on the right side, extending across the middle line of the body towards the left side. Its front border reaches just below the border of the chest when the posture is sitting or standing; but when the person lies down the liver passes slightly up so as to be completely under cover of the ribs, except a small portion which extends beyond the lower end of the breast-bone. From its position it is extremely liable to compression and injury. It is the largest gland in the body, and weighs from 50 to 60 ounces avoirdupois. In its general form the liver is flat, broad and thick towards the right side, becoming narrow and thin towards the left side. Its upper surface is convex or arched and fits into the concave surface of the diaphragm while its lower surface is irregularly divided into certain 'lobes,' five in number, and separated by clefts or fissures. These lobes are known as the right, left spegelian, caudatus and quadrate lobes.

When microscopically examined the entire mass of the liver is found to consist mainly of large many-sided cells containing granular protoplasm. They are arranged in groups or masses, each little mass being called a lobule, and each lobule slightly mapped off by connective tissue and containing a meshwork of blood-vessels and ducts. These blood-vessels are branches of the *portal vein.* This vein receives the blood which has circulated in the stomach and intestines and carries it throughout the entire liver by a network of finely subdivided veins. It is from this supply of blood that the bile is secreted. The blood passes off from the liver by the *hepatic vein,* formed by the union of small vessels which begin in the center of the lobules. The connective tissue of the liver is supplied with arterial blood by the *hepatic artery.* This blood, like that which has entered through the portal vein, is drained off into the hepatic vein. There is, however, another set of vessels which ramify through the liver, namely the *bile ducts,* whose business it is to carry off the bile produced in the gland. These ducts intersect and unite until in the end two channels are formed, one from the right and the other from the left of the liver, which ultimately form one common exit into the small intestine called the *common bile duct.* Thus, when the bile has been secreted by the liver-cells, it is transferred by way of this hepatic duct into the small intestine, where it mingles with the food. When this flow of bile ceases, as it does when intestinal digestion is interrupted, the supply which still continues is stored in the gall bladder, which forms a kind of reservoir situated under the liver.

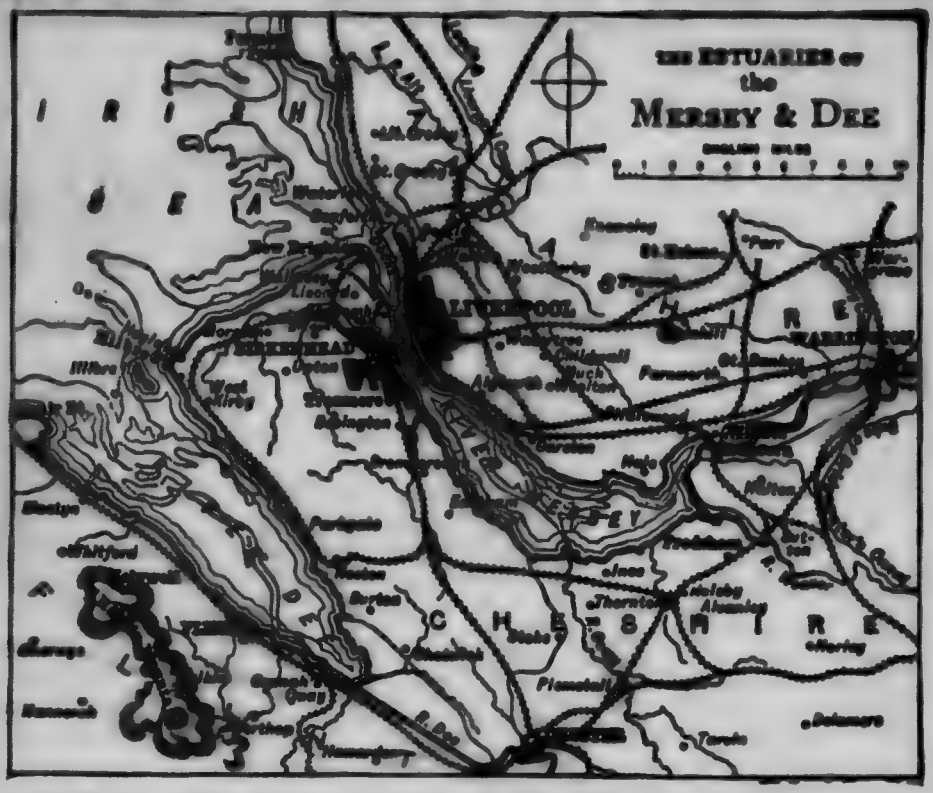
The functions of the liver would seem to be, at least, threefold. It serves (1) to secrete from the blood received from the stomach and intestines that amount of bile which is necessary for the purposes of digestion. The bile, however, contains waste matter, which has been separated from the blood. The liver, therefore, (2) has a direct function in separating and casting forth the waste impurities of the blood. Further, it appears from recent investigation that (3) the liver secretes a substance which is called *glycogen* or *animal starch.* The use of this substance, which is readily converted into sugar, would seem to be to supply the tissues with material for their energy and heat. The functions of the liver, however, still form the subject of dispute and investigation among physiologists. See *Bile* and *Gall-bladder.*

There are many diseases connected with this important gland. There is *congestion of the liver,* which indicates that the structure is surcharged and choked with blood. This arises from various causes; heart disease, disease of the lungs, or even excess in food or drink will produce congestion. The symptoms are excessive weight, fullness, and a tenderness in the organ, which may be proved by a slight push in the region beyond the breast-bone. *Inflammation of the liver* is frequent in hot countries; is closely connected with dysentery, and its symptoms are similar to those connected with congestion. *Cirrhosis of the liver* or *drunkard's liver* is frequently caused by excessive spirit-drinking—but not necessarily so, as it has been known to occur in children. The symptoms are many and not easily recognised; and the disease may remain for years before a fatal issue.

Fatty degeneration of the liver occurs when the cells become crowded with globules of oil, and it becomes large and pale. This result usually arises from overfeeding or drinking and want of exercise. See *Jaundice*.

Liver-fluke. See *Distoma*.

Liverpool (liv'er-pōl), a seaport of England, County of Lancaster, on the right bank of the Mersey, about 4 miles from its confluence with the Irish Sea, 185 miles northwest from London. Liverpool has had a rapid and recent growth. Camden speaks of 'Litherpoole commonly called Lirpoole' as the place 'where is the most convenient and most frequented passage to Ireland'; and it was the conquest of that country which gave the first impulse to the trade of Liverpool'; and in 1626 it was rated however, in the sixteenth century, so that it was mentioned in Queen Elizabeth's reign as 'her majesty's poor decayed town of Liverpool;' and in 1636 it was rated at £20 for ship-money when Bristol was rated at £1000. In 1709 the first wet-dock in the kingdom was erected at Liverpool, and from that time, but more particularly during the nineteenth century, its increase in wealth and influence has been immense. It stands partly on flat ground along the margin of the river, but chiefly on the slopes of a series of moderate eminences. The general appearance of the town has been greatly altered in recent years by the formation of new streets and by the widening of many old ones. In the central districts in particular the densely-peopled courts and narrow unhealthy alleys have been opened or demolished. The chief public buildings are the town hall, municipal offices, revenue buildings, St. George's Hall, exchange, public library and museum, art gallery, Picton reading-room, the Wellington rooms, government offices and law courts. The town hall is a Greek building dating from 1754, but greatly altered and extended since. It contains a fine suite of apartments, and serves as the official residence of the mayor. The municipal offices were completed in 1868, at a cost of £160,000. St. George's Hall, completed in 1854 at a cost of £250,000, is a building in the Grecian style, especially notable for the excellence and beauty of its architecture. The free public library and



museum—erected at the sole expense of the late Sir William Brown, a Liverpool merchant, and now maintained out of the public rates—is a handsome building of the Corinthian order. The exchange is an edifice of great magnitude, consisting of a center and two wings, with a frontage of 1500 feet. The provision markets are spacious, airy, covered buildings, and are five in number. The charitable and benevolent institutions, such as hospitals and infirmaries, etc., are numerous. The educational institutions include University College (affiliated to the Victoria University, Manchester), Liverpool College, the Royal Institution, the Liverpool Institute, School of Art and Gallery of Art, etc. The squares and open spaces of the city are not numerous, but it is exceptionally well provided with public parks, and around these many elegant private residences. Sefton Park (400 acres) is the largest. Next to London this city is the chief seaport in the United Kingdom. Immense docks lie along both sides of the Mersey, with a length of 8 miles, a quay space of 30 miles, and a total water area of over 500 acres (including those of Birkenhead). In connection with the river one of the principal features is the famous floating landing stage, its length of 2083 feet resting upon pontoons, which rise and fall with the tide. Among the imports cotton holds the chief place, followed by provisions and live-stock, cereals, fruits, hides, palm and olive oil, wine and spirits, tobacco, etc. Cotton goods form by far the principal export; other exports are machinery, woolens, etc. Manufacturing industries are varied, and include engineering, iron- and brass-founding, chemicals, sugar-refining, brewing, rope-making, etc. Liverpool is the chief port in Britain for the departure of emigrants. There are five approaches to the town by railway, and by the opening of the tunnel under the Mersey, the railway facilities have been materially increased. Liverpool is, next to London, the largest town in England, and the third in Great Britain, Glasgow being the second. The city is divided into sixteen wards, each of which returns three councilors. Since 1885 the representatives sent to Parliament have been increased from three to nine, the divisions within the city being—Kirkdale, Walton, Everton, West Derby, Scotland, Exchange, Abercromby, East Toxteth and West Toxteth. Pop. 746,566.

Liverpool, Robert Banks Jenkinson, Earl of, born in 1770; died in 1828. He entered Parliament under Pitt's auspices in 1790, and on his father being created Earl of Liverpool in 1796 he became Lord Hawkesbury. As foreign secretary in the Addington ministry he negotiated the treaty of Amiens, and he became home secretary in 1804. On the assassination of Percival, in 1812, he became premier, and held that position till 1827. His opposition to all liberal measures, the severity with which he repressed internal disturbances, and his prosecution of Queen Caroline rendered him extremely unpopular. His father, Charles Jenkinson, first Earl of Liverpool (1729-1808), held several subordinate offices in the government, and was the author of several political pamphlets, a collection of treaties, etc.

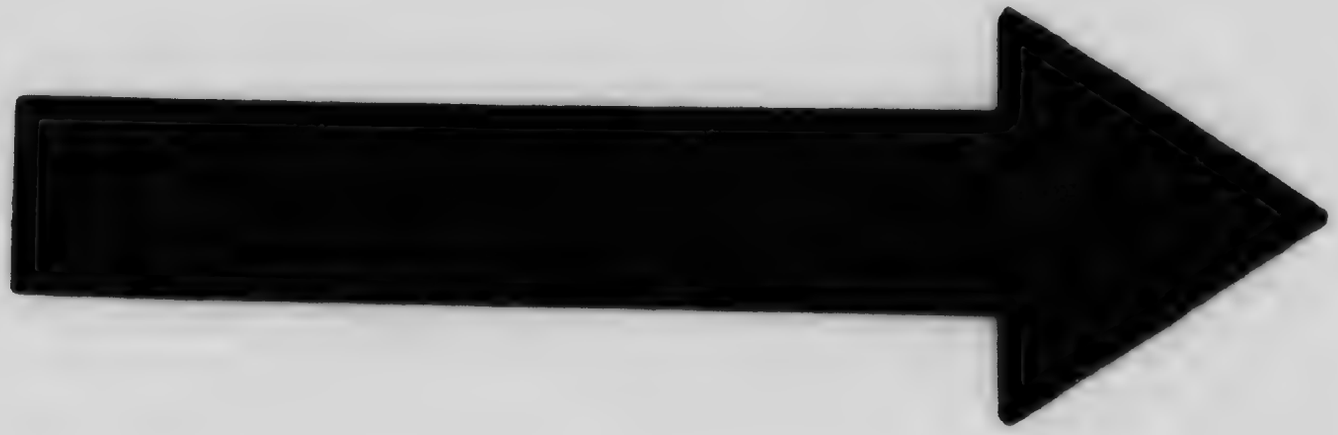
Liverpool Plains, lie in the northern interior of New South Wales, and were named by Mr. Oxley, the discoverer, in 1818 after Lord Liverpool. They form a pastoral area of over 16,000 square miles.

Livingston (liv'ing-stun), Edward, statesman, was born in Clermont, New York, in 1764. He was sent to Congress, from New York, in 1794, serving until 1801; from Louisiana, from 1822 to 1829, being then elected United States Senator. In 1831 he was Secretary of State; in 1833 was minister to France. He died in 1836.

Livingston, a city, capital of Park county, Montana, on the Yellowstone River, 25 miles s. of Bozeman. It has railroad shops and mining interests. Pop. 5359.

Livingston, Robert R. (1747-1813), an American statesman and jurist, born in New York and educated at King's (Columbia) College. He was elected a member of the Continental Congress and served on the committee appointed to draw up the Declaration of Independence. He was a member of the committee which drafted the first constitution of the State of New York in 1777, and upon its adoption became Chancellor of the State of New York, an office which he held for 32 years. He was made secretary of foreign affairs under the Confederation, 1781-83. He was president of the New York Convention of 1788 and used his great influence to secure the ratification of the Federal Constitution. In 1801 he was appointed resident Minister at the court of Napoleon and successfully negotiated the Louisiana purchase in 1803.

Livingstone (liv'ing-stun), David, missionary and one of the greatest of modern travelers, was born at Blantyre, Lanarkshire, in 1813, and died at Bangweolo, Africa, 1873. Under the auspices of the London Missionary Society he proceeded in 1840 to South Africa, where he joined Robert Moffat in



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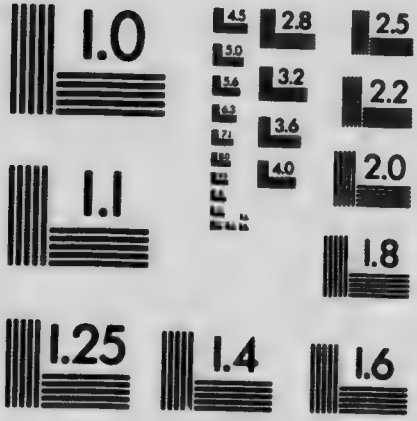

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the missionary field. His first station was in the Bechuana territory, and here his labors for nine years were associated with Mr. Moffat, whose daughter he married. Having heard from the natives that there was a large lake north of the Kalahari desert, he proceeded to explore that region, and discovered the valley of the Zouga and Lake Ngami. Subsequently he penetrated further northwest until he reached Linyanti, the capital of the Makololo territory, situated on the Chobe, a tributary of the Zambesi, which river he also visited. In 1853-56 he made a great exploring journey, or series of journeys. Starting from Linyanti he ascended the Leeambye (Upper Zambesi), journeyed overland to Lake Dilolo, and thence to St. Paul de Loanda on the west coast. Returning to Linyanti, he struck eastwards from there in 1855, tracing the Zambesi to the Indian Ocean, and reaching Quilimane on the east coast in 1856, having thus crossed the entire continent. The record of this journey is found in his *Missionary Travels and Researches in South Africa* (Lond. 1857). After making various journeys and exploring the Lake Nyassa and Zambesi region, Livingstone set forth in 1865 to set at rest the question of the sources of the Nile. From this time till his death he was engaged in laborious explorations in the lake region of South Africa, especially to the westward of Nyassa and Tanganyika, where he discovered Lakes Bangweolo and Moero, the Upper Congo, etc. For about three years no communication had come from him, and the doubts regarding the traveler's safety were only set at rest when it was known that H. M. Stanley, the special correspondent of the *New York Herald*, had seen and assisted Livingstone at Ujiji, on Lake Tanganyika. They parted in March, 1872, Livingstone going to explore the southern end of Tanganyika, and Stanley proceeding to Zanzibar. After another year's wanderings he was attacked with dysentery near Lake Bangweolo, and there died. His body was buried in Westminster Abbey, having been conveyed to the coast, rudely preserved in salt, by his faithful followers.

Livingstonia (liv'ing-stō'ni-a), a mission settlement of the Free Church of Scotland, established in 1875 on Cape MacClear, at the south end of Lake Nyassa, in Southern Africa.

Livius (liv'i-us), TITUS PATAVINUS, often called LIVY, a celebrated Roman historian, born at Patavium (Padua) in the year 59 B.C. Nothing is known of his life except that he came to Rome, secured the favor of Augustus, and became a person of some consequence at court, that he was married, and had at least two children, and that he died in his native town, according to some authorities, in A.D. 11, and to others, in A.D. 16 or 17. His Roman history begins at the landing of Æneas in Italy, and comes down to the year of the city 744 (B.C. 9). His whole work consisted of 140 or 142 books, of which we have remaining only the first ten, and those from the twenty-first to the forty-fifth, or the first, third and fourth decades, and half of the fifth. Of all the books, however, except two, we possess short epitomes or tables of contents. In the first ten books the history extends from the foundation of Rome in B.C. 753 to the year 294 B.C.; the portion between the twenty-first and forty-fifth books contains the account of the second Punic war and the history of the city between B.C. 219 and 201. The fourth and the half of the fifth decade bring down the history to the year B.C. 167. Livy makes no pretensions to the character of a critical historian; his grand purpose was to glorify his country, and he adopted all the legends of the early history without troubling his mind about their authenticity.

Livius Andronicus (liv'i-us an-dro-nī'kus), the father of Roman poetry, by birth a Greek of Tarentum, and resident in Rome at the beginning of the third century B.C. He introduced upon the Roman stage dramas after the Grecian model, and, besides several epic poems, wrote a translation of the *Odyssey* in the old Saturnine verse. We have only a few fragments of his writings.

Livonia (li-vō'ni-a), or RIGA, a government of Russia, including the island of Oesel, bounded west by the Baltic; area, 18,160 square miles. For the most part the country is flat and swampy, yet a great part is under cultivation and yields good crops of oats. The forests are extensive. The governing classes and landed proprietors are chiefly Germans and Russians, while the peasantry are mostly of Finnish and Lettish origin. The inhabitants are almost all Protestants. The capital is Riga. Pop. 1,295,231.

Livre (lē-vr), an old French money of account, not now in use, having been superseded by the franc. The *livre tournois* was worth 20 sous, about twenty cents; the *livre parisis*, 25 sous, about twenty-four cents.

Livy. See *Livius*.

Lixuri (liks-ō'rē), a seaport in Cephalonia, one of the Ionian Isl-

ands, a principal depot for wines and currants. Pop. 5484.

Li Yuan Hung, President of China, was born in 1864, entered the naval service, and afterwards the military, aided in organizing the army, commanded the revolutionary force at Wuchang in 1911, and was elected Vice-President of the new republic under Yuan Shi-Kai. He opposed the restoration of the empire by the president and after the death of the latter in 1916 succeeded to the presidency.

Lizard (liz'ärd), the popular name of numerous reptiles forming the order Lacertilia or Sauria, and having usually two pair of limbs and an elongated body terminating in a tail. The lizards number more than a thousand species, accommodating themselves to all conditions except cold, and increasing in size and number in tropical regions. In some the tongue is thick and fleshy and in others it is divided, while in most cases it is protrusible. Some lizards are vegetable feeders, but for the most part they are carnivorous and live upon small birds, insects, etc. The eggs are deposited and left to be hatched without care from the parents. The chief families of lizards are the Scincidæ, or Skinks; the Geckotidæ, or Geckos; the Iguanidæ, or Iguanas; and the Chamæleonidæ or Chameleons. Poison glands are wanting in the lizards; the only exception being the *Heloderma* of Arizona and Mexico, which is capable of inflicting a poisonous bite.

Lizard Point, a headland of England in Cornwall forming the most southern point of Great Britain, 24 miles E. S. E. of Land's End, and having two lighthouses with fixed lights 224 feet above sea-level; lat. 49° 57′ 42″ N.; lon. 5° 12′ W. Used as a reporting station for transatlantic vessels.

Llama (lä'ma or lyä'mä; *Auchenia*), an ungulate ruminating quadruped found in South America, closely allied to the camel, and included in the family Typlopoda. They differ from the camel in having no hump upon the back, in having a deeper cleft between the toes, the callous pad of the foot is less developed, and the interval between the canine and the back teeth is greater. The tai lbeing short and the hair long and thick, the llama has the general appearance of a long-necked sheep, standing about 3 feet at the shoulder. Of the four known species the guanaco and the vicuña are found in a wild condition, while the llama and the alpaca have long been domesticated. The llama is used by the inhabitants of Chile and Peru to carry burdens after the manner of a camel. When loaded with about a hundredweight it can travel some 14 miles a day across the mountain passes. They are gentle and docile creatures.

Llandaff (lan-daf'; *Llan Táf*, Church of the Taf), an ancient city of South Wales, Glamorganshire; now a mere village, situated on the right bank of the Taff, 2 miles northwest of Cardiff. It is the seat of a bishop, its cathedral dating from the twelfth century.

Llandeilo-beds (lan-dī'lo), in geology, the name of one of the lower Silurian rock groups. See *Geology*.

Llandudno (lan-dud'nō), coast town and fashionable watering place in Carnarvon, Wales, on a peninsula between Orme's Bay and the estuary of the Conway. Pop. 9279.

Llanelly (lä-neth'li), a parliamentary borough of South Wales, in Carmarthenshire, situated on the Bury, 14 miles south by east of Carmarthen. It is the outlet for the products of extensive collieries, iron-foundries, copper, tin, lead, and silver works, in which a large number of the inhabitants are employed. The trade is facilitated by four commodious docks, from which great quantities of coal are exported. Pop. (1911) 32,077.

Llangollen (Welsh pron. hlàn-goth'-len), a town of North Wales, county of Denbigh, 21 miles southeast of Denbigh, picturesquely situated in a narrow valley on the right bank of Dee. Pop. (1911) 3250.

Llanos (lyä'nōs), the Spanish name given to the vast plains situated in the north part of South America, particularly in Colombia and the basin of the Orinoco. During the dry season the vegetation is burned up by the sun, while in the rainy period they are flooded with water. Between these two seasons the llanos are covered with thick grass and ranged by vast herds of cattle and horses. Farther south such plains are called *pampas*, and in North America *savannahs*.

Llanquihue (lyàn-kē'wā), a southern province of Chile, situated between the Andes and the Pacific Ocean. Its area of nearly 8000 square miles is extremely fertile, yielding abundant harvests to its inhabitants, who are mostly Germans; capital, Puerto Mont. Pop. 78,315.

Llerena (lye-rä'nä), a city of Spain, in the province and 62 miles southeast of Bandajoz. Pop. 7049.

Llorente (lyo-ren'tä), JUAN ANTONIO, a Spanish historian, born in 1756; died in 1823. He received

his education at Tarragona, entered the clerical order in 1776, was made a priest in 1779, became vicar-general of Calahorra in 1781, and chief-secretary to the Inquisition in 1791. When the Inquisition was suppressed by order of Napoleon and the Cortes, Llorente received many documents connected with it, and published his *Critical History of the Inquisition in Spain* in 1817. Having been exiled from Spain on the return of Ferdinand VII, in 1814, he resided first in England and then in Paris, where he published (1822) his *Portraits Politiques des Papes*, a work which enraged the French clergy, and caused its author to be expelled from France.

Lloyd George, DAVID, a British cabinet officer, born at Manchester in 1863, of Welsh descent, and educated in Wales. He became a solicitor in 1884, was elected to Parliament from the Carnarvon boroughs in 1890, and acquired a reputation for ability and radicalism. He fearlessly opposed the Boer war, despite the prevailing sentiment, earnestly championed the cause of the workingmen, and distinguished himself by settling a great cotton strike and averting a serious railway strike. After the Liberal victory of 1905 he was made president of the Board of Trade, and entered the Asquith cabinet of 1908 as chancellor of the exchequer. As such he brought in a budget taxing the unearned increment of landed estates and forced its passage, despite vigorous opposition in the House of Lords. In the contest the existence of this House was seriously threatened. In 1916, following the death of Lord Kitchener, he was made Secretary of State for War and succeeded Asquith as premier in 1916. He was returned to power in December, 1918.

Lloyd's (loids), an incorporated society of persons engaged in marine insurance in London, or otherwise connected with shipping, having rooms in the London Royal Exchange. Members are admitted by subscription and the affairs of the institution are conducted by a committee. Reports are received daily from all foreign ports, and this information is posted in the common or merchants' room. Lloyd's List, containing shipping reports, is published daily, and Lloyd's Register of shipping is issued annually. Originally the London underwriters met at Lloyd's Coffee-house, hence the name. See *Insurance*.

Lô, ST. (san lō), a town of France, capital of the department of La Manche, on the right bank of the Vire, 158 miles west by north of Paris. Pop. 3959.

Loach (lōch), a small fish (*Cobitis barbatula*) inhabiting small clear streams in England, and esteemed dainty food. A smaller species, the spined loach or groundling (*C. tænia*), also occurs in England. The name is also given to the eel-pout (*Lota vulgaris*) and the three-bearded rockling (*Motella vulgaris*).

Load-line (lōd-lin), is a line drawn on the side of a ship to indicate that if she is loaded so as to sink deeper she is overloaded.

Loadstone, LODESTONE (lōd'stōn; Fe_3O_4), an ore of iron, consisting of the protoxide and peroxide in a state of combination, and frequently called the magnetic oxide of iron. It was known to the ancients, and they were acquainted with the singular property which it possesses of attracting iron to itself. See *Iron Magnet*.

Loam (lōm), a soil compounded of various earths, of which the chief are sand, clay and carbonate of lime or chalk, the clay predominating. Decayed vegetable and animal matter, in the form of humus, is often found in loams in considerable quantities, and the soil is fertile in proportion.

Loan (lōn), anything lent or given to another on condition of return or payment. In law loans are considered to be of two kinds—*mutuum* and *commodate;* the former term being applied to the loan of such articles as are consumed in the use, as provisions or money; the latter to the loan of such articles as must be individually returned to the lender. The acknowledgment of a loan of money may be made by giving a bond, a promissory note, or an I. O. U., the last of which requires no stamp.

Loanda (lō-ăn'da), ST. PAUL DE, a seaport town and island in Southwestern Africa. The town is a bishop's see, and the chief settlement of the Portuguese in this part of Africa. Principal exports, ivory and bees'-wax. Pop. 20,106. The island, opposite the town, and separated from the mainland by a narrow channel, is about 18 miles in length and 2 miles in breadth. It contains seven or eight villages.

Loango (lō-an'gō), a maritime country in Africa, stretching northward from the Congo along the Atlantic. The chief products are palm-oil, gum, caoutchouc, coffee, cotton, etc. Neither horses, cows, sheep, nor asses thrive. The population is dense, but barbarous and superstitious. The country now belongs chiefly to France.—LOANGO, the chief town, is a collection of huts and factories.

Lobbyists, a term applied to men who make a business of corruptly influencing legislators, by means of money paid to the members, or by any other method that is considered feasible. Many women engage in this work as well as men. The term lobby, which literally means the ante-rooms of legislative halls, has come to be applied to these people who frequent them, and they are sometimes styled the Third House.

Löbau (*leu'*bou), a town of Prussia, province of West Prussia. It has considerable manufactures and an active trade. Pop. 10,683. There is a town of the same name in Saxony, 12 miles S. E. of Bautzen, with woolen and linen mills and a pop. of 4451.

Lobelia (lō-bē'li-a; named after Matthew Lobel, physician and botanist to James I), a very extensive genus of beautiful herbs, natives of almost all parts of the world, especially of the warmer parts of America, tribe Lobeliaceæ, nat. order Campanulaceæ. *L. inflāta* is the Indian tobacco, which is cultivated in North America, and is employed in medicine. The small blue lobelia so popular in gardens is *L. Erinus*, a Cape species. A brilliantly scarlet-flowered species, *L. cardinālis*, is the cardinal-flower. *L. siphilitica*, an American species, possesses emetic, cathartic and diuretic properties. Two species are found wild in Britain.

Lobeliaceæ (lō-bē-li-a'se-ē), a tribe of Campanulaceæ, differing from Campanulaceæ proper in having irregular flowers, and like the Compositæ syngenesious anthers, but otherwise resembling them very nearly.

Lobipedidæ (lō-bi-ped'i-dē), a family of aquatic grallatorial birds, including the coots and phalaropes.

Loblolly-bay (lob'lol-i), the popular name of *Gordonia Lasianthus*, nat. order Linaceæ, an elegant ornamental evergreen tree of the maritime parts of the Southern United States, having large and showy white flowers. It grows to the height of 50 or 60 feet.

Loblolly-pine (*Pinus tæda*), an American pine, next to the white pine the loftiest in North America. Its leaves are 6 inches long, united by threes or fours. Its timber is of little value.

Lob-Nor (lōb-nōr), a salt lake in Central Asia, in Eastern Turkestan, which receives the river Tarim.

Lobos (lō'bos), or SEAL ISLANDS, three islands in the Pacific Ocean, off the coast of Peru, lat. 6° 29' S., lon. 80° 53' W. The largest, called Lobos de Tierra, is 10 miles distant from the mainland, and is about 5 miles long, and 2 miles broad at the widest part. Large quantities of guano have been obtained from these islands.

Lobster (lob'ster), the common name of the macrurous (long-tailed), decapodous (ten-footed), stalk-eyed crustaceans, belonging to the genus *Homārus*. The first pair of ambulatory limbs bear the well-known and formidable lobster-claws. The abdomen has rudimentary limbs on its under side, among which are lodged the newly excluded spawn. The tail consists of several flat shelly plates capable of being spread like a fan, and used as a swimming organ. Lobsters inhabit the clearest water, living in the crevices of a rocky bottom. Lobsters are esteemed a very rich and nourishing aliment, but dangerous unless fresh and in good condition. They are generally in their best season from the middle of October till the beginning of May. The common lobster (*H. vulgāris*) is found in great abundance on many of the European shores. *H. Americānus* is found on the coasts of North America, and is largely taken for sale, so largely that its numbers are rapidly diminishing. It is closely allied to *H. vulgāris*. The fresh-water lobster is the crawfish or crayfish.

The third abdominal segment of the Lobster. *f*, Dorsal arch; *s*, Ventral arch of the segment; *a*, Protopodite; *b*, Exopodite; *c*, Endopodite.

Lobworm (*Arenicōla piscatōrum*), a genus of Annelida or Worms. It has a round, obtuse head, a body about the size of a large earthworm, and respires through thirteen pairs of gill-tufts. Traces of the lobworm may be found on every sea-beach in the little coils of sand which it leaves when burrowing after the tide has ebbed. It is used for bait in deep-sea fishing. It is called also *Lugworm*.

Local Option, a term applied to the principle by which a certain majority of the inhabitants of a certain locality may decide as to whether any, or how many, places for the sale of intoxicating liquors shall exist in the

locality. Many of the States of this country have such laws, which differ in specific details, and through their operation the sale of liquor has been forbidden in a large part of certain States in which no general prohibition law has been passed. Within late years there has been a very active movement in this direction, and while a number of States had adopted complete prohibition, various others have achieved almost state-wide prohibition through the exercise of local option laws. In Illinois, for instance, there are 1500 prohibition towns, and full license exists in only a few counties. Kentucky has 96 prohibition counties, the area open to liquor sale being very small. Other States in which local option prohibition is widespread are Minnesota and Ohio, and it has made much progress in Massachusetts and several other States. Local option and prohibition have made little progress in foreign countries. An effort to pass a licensing bill that dealt severely with liquor interests was made in England in 1908, but was defeated in the House of Lords, party leaders assuming that public opinion was not ready for such a measure. See *License* and *Prohibition Party*.

Locarno (lō-kär'nō), a small town of Switzerland, formerly one of the three capitals of the Canton Ticino, in a charming but unhealthy locality on Lago Maggiore. Pop. 3603.

Locative Case (lok'a-tiv), in grammar, is the case expressive of locality. Such a case existed originally in all the Aryan languages; in Sanskrit all nouns and pronouns have a locative case.

Lochaber-axe (loh-à'bêr-aks; from *Lochaber*, a district in Inverness-shire), a weapon, consisting of a pole bearing an axe at its upper end, formerly used by the Highlanders of Scotland.

Loches (lōsh), a town of France, dep. of Indre-et-Loire, on the left bank of the Indre, 29 miles southeast of Tours. In its castle several kings of France resided, and Louis XI used it as a State prison. Pop. (1906) 3751.

Loch Katrine. See *Katrine, Loch.*

Loch Leven. See *Leven.*

Loch Lomond. See *Lomond, Loch.*

Lock (of firearms). See *Musket, Revolver, Rifle*, etc.

Lock, an inclosure in a canal, with gates at each end, used in raising or lowering boats as they pass from one level to another. When a vessel is descending, water is let into the lock till it is on a level with the higher water, and thus permits the vessel to enter; the upper gates of the lock are then closed, and by the lower gates being gradually opened, the water in the lock falls to the level of the lower water, and the vessel passes out. In ascending the operation is reversed, that is, the vessel enters the lock, the lower gates are closed, and water is admitted by the upper gates, which, as it fills the lock, raises the vessel to the height of the higher water.

Lock, an appliance used for fastening doors, chests, drawers, etc. A good lock is the masterpiece in smithery, and requires much art and delicacy in contriving and varying the wards, springs, bolts, and other parts of which it is composed, so as to adjust them to places where they are serviceable, and to the various occasions of their use. The principle upon which all locks depend is the application of a lever to an interior bolt, by means of a communication from without, so that by means of the latter the lever acts upon the bolt, and moves it in such a manner as to secure the door or lid from being opened by any pull or push from without. The security of locks in general, therefore, depends on the number of impediments that can be interposed between the lever (the key), and the bolt which secures the door, and these impediments are known by the name of *wards* (which slip into corresponding grooves of the key), the number and intricacy of which are supposed to distinguish a reliable lock from one that may be easily picked. The Yale Lock, invented by Linus Yale, now in very common use, is a distinct step in advance of the tumbler lock, and does away with the idea that a big key is necessary for a safe fastening. It contains pins held down by a spring, and which can be lifted only by a key 'tted in contour to meet them. As the combinations of the pins can be greatly varied, the keys may be similarly diversified. The time-lock is one in which clock-work operates the combinations so that it can be opened only at a particular hour. See also *Chubb-lock.*

Locke (lok), JOHN, eminent English philosopher, was born at Wrington, in Somersetshire, in 1632, and died in 1704 at Oates in Essex. He was sent to Westminster School; from there he went to Christ Church, Oxford, and applied himself to the study of medicine. In 1666 Locke made the acquaintance of Lord Ashley, afterwards Earl of Shaftesbury, and held various offices in the patronage of that nobleman. When, in

1682, his patron was obliged to retire, for political reasons, to Holland, Locke accompanied him in his exile. Owing to the troubled condition of his country, and the continued triumph of the party which he had opposed, Locke continued to reside abroad. He returned to England at the Revolution, and was appointed commissioner of appeals under the new government. So early as 1670 Locke had formed the plan of his famous *Essay on*

John Locke.

the Human Understanding, a plan which he had carefully elaborated in his exile, and which he published in its completed form in 1690. It was received with much opposition, notably by the University of Oxford, who resolved to discourage it; but despite this it acquired a great reputation throughout Europe, and was translated into French and Latin. Locke was made a commissioner of trade and plantations in 1695, but retired when unable to perform its duties, and lived with his friend, Sir F. Masham, until his death. Briefly, it may be stated that the chief purpose of Locke's celebrated *Essay* was to find the original sources and the scope of human knowledge. The conclusions he arrived at were that there is no such thing as an 'innate idea'; that the human mind is a sheet of white paper prepared to be written upon; that the knowledge thereon written is supplied by experience; and that 'sensation' and 'reflection' are the two sources of all our ideas. Among other works of Locke are three *Letters on Toleration; Thoughts Concerning Education; Reasonableness of Christianity;* two *Treatises on Government; Notes upon St. Paul's Epistles to the Galatians, Corinthians, Romans and Ephesians;* and a *Treatise on the Conduct of the Understanding.*

Lockhart (lok'härt), JOHN GIBSON, author, and editor of the *Quarterly Review*, was born at Cambusnethan in 1794, and died at Abbottsford in 1854. He was educated at Glasgow University; gained an exhibition at Baliol College, Oxford; studied for the Scottish bar, but never practised; and began his literary career in 1817 as a contributor to the newly-established *Blackwood's Magazine*. In 1820 he married the daughter of Sir Walter Scott, and in 1826 succeeded Mr. Gifford as editor of the *Quarterly Review*, a position which he occupied for twenty-seven years. His *Life of Sir Walter Scott* is highly esteemed.

Lock Haven (lok-hā'ven), a city, county seat of Clinton county, Pennsylvania, on the west branch of the Susquehanna River, 25 miles S. W. of Williamsport. It contains a State normal and other academic schools, paper mill, tannery, planing mills, furniture factory, fire brick, and other works. Pop. 7772.

Lockport (lok'port), a city, capital of Niagara county, New York, on the Erie Canal, 25 miles E. N. E. of Buffalo. It is built on the declivities of a long ridge, and the canal here has 5 locks, carrying it down 60 feet from the Lake Erie to the Genesee level. This yields abundant water power. It is a fruit-shipping point and has large chemical and common storage warehouses. Industries include flour mills, steel plant, ironworks, pulp, paper and fiber mills, and various other manufactures. Near by are large limestone quarries, affording building material. Pop. 18,382.

Lockwood (lok'wud), BELVA ANN, MRS., lawyer, born at Royaltown, New York, in 1830. She was instrumental in inducing Congress to pass a law giving equal pay for equal services in government offices to women and men. She was admitted to the bar in Washington in 1879, and took part in important law cases. Was nominee of the Equal Rights party for President in 1884 and 1888. Was a delegate to the Arbitration Convention, New York, and the International Peace Congress, London, 1907.

Lockyer (lok'yer), JOSEPH NORMAN, an English astronomer, born at Rugby in 1836, and educated privately. He entered the War Office in 1857; became astronomical lecturer at South Kensington, and directed the eclipse expedition to Sicily in 1870, and to India in 1871. His reputation rests upon his discoveries in spectrum analysis and his theory of astronomical evolution. His contributions to literature include *Elementary Lessons in Astronomy* (1868), *Studies in Spectrum Analysis*

(1872), *Solar Physics* (1874), *Star-gazing* (1877), *the Chemistry of the Sun* (1887), and *Meteoric Hypothesis* (1890), the latter his most notable contribution to science.

Locle (lok'l), a town of Switzerland, in the canton and 10 miles W. N. W. of Neufchâtel. It has important manufactures of clocks and watches, and a school of watchmaking. Pop. 12,626.

Locomotive Engine. See *Steam Engine Locomotive;* also *Oil.*

Locomotor Ataxy (lō-kō-mō'tor), is a peculiar disease of the nervous system, deriving its name from the fact that the sufferer from it cannot order the movements of his limbs for definite purposes. The patient requires to guide his feet and legs by means of his sight, and even then the feet are jerked out and brought down in a violent way. This difficulty of movement is called 'want of coördination of movement.' The causes of this disease are obscure, its progress usually extends over a number of years, and recovery is rare. Also called locomotor ataxia.

Locris (lō'kris), the name of two portions of ancient Greece, the one on the east opposite the island of Eubœa; the other on the west, on the north side of the Corinthian Gulf. The Locrians played an unimportant part in Greek history, but a city established by them in Southern Italy, in the Bruttian peninsula (or toe of Italy), attained a very flourishing condition.

Locus (lō'kus), in geometry, the line traced out or generated by a point which is constrained to move in accordance with certain determinate conditions; thus, the *locus* of a point moving in a plane, and which must preserve the same uniform distance from a fixed point, is a circle.

Locust (lō'kust), the name of several insects of the order Orthoptera, of which the genus *Locusta* is a type, allied to the grasshoppers and crickets. Their hind legs are large and powerful, which gives them a great power of leaping. Their mandibles and maxillæ are strong, sharp and jagged, and their food consists of the leaves and green stalks of plants. They fly well, but are often conveyed by winds where their own powers of flight could not have carried them. The most celebrated species is the migratory locust (*L. migratoria*). It is about 2½ inches in length, greenish, with brown wing-covers marked with black. Migratory locusts are most usually found in Asia and Africa, where they frequently swarm in countless numbers, darkening the air in their excursions, and devouring every blade of the vegetation of the land they light on. They are destructive both in the larval, nymph, and perfect conditions. The Arabs and others use them as food. When dried in the sun they are pounded up and baked into bread, or fried in oil as a delicacy. In the United States locusts are usually known as 'grasshoppers.' There are two specially destructive species, one of which, *Caloptēnus femurrubrum*, is found in Northern New England and Canada; and the other, *Caloptēnus spretus*, breeds abundantly west of the Mississippi. In the summer months occasionally the latter species commits widespread ravages in Texas, Kansas and Colorado.

Locust (*Locusta migratoria*).

Locust, Seventeen-year. See *Cicada.*

Locust-tree, or ACACIA (*Robinia pseudacacia*, nat. order Leguminosæ), is found in the Eastern United States, but grows to its best in Kentucky and Tennessee. There it acquires a girth of 4 feet and a height of 80 feet. The leaves are pinnate, smooth, prickly at the base; the flowers grow in pendulous racemes, white, fragrant and producing smooth pods. The wood of the locust-tree is highly valued for certain purposes, being close-grained, tough, light and elastic in the best variety; it is reddish-tinted. It is used for housework, fences, railway sleepers, cabinet-making, etc.

Lodes, or MINERAL VEINS, are veins containing metallic ores that have been deposited at a later date than the rocks by which they are surrounded. In a strict geographical sense beds are distinguished from veins by the fact that the former are of contemporaneous, the latter of subsequent, origin to the surrounding rocks; but this distinction is not always observed. Most lodes are simply the contents of fissures in the original rock. They may occur in either igneous or sedimentary rocks. The dimensions of the veins vary widely. The breadth, measured at right angles to the walls, may be only a fraction of an inch or it may extend to hundreds of feet.

Lodge (lodj), GEORGE CABOT, poet, was born at Boston in 1873, the son of Henry Cabot Lodge. He studied at the University of Paris, served

through the Spanish-American war, and afterward was private secretary for his father till his death in 1909. He published *Song of the Wave* (1893), *Poems* (1902), *Cain* (a drama, 1904), and *The Great Adventure* (1905). His poetic work was highly regarded.

Lodge, HENRY CABOT, statesman and author, was born in Boston, Massachusetts, in 1850. He was graduated from Harvard Law School in 1874. Distinguished as a writer on economic, financial and commercial subjects; he served as Representative in Congress from Massachusetts from 1887 to 1893, and was transferred to the Senate in the latter year. He has since been prominent in the Senate.

Lodge, SIR OLIVER JOSEPH, scientist, was born at Penkhull, England, in 1851. In 1880 he was appointed professor of physics at the new University College, Liverpool, and in 1887 was elected a fellow of the Royal Society. His chief studies have been in electricity, in which he has made discoveries of importance. He is a prominent member of the Society for Psychical Research, has been its president, and is deeply interested in its work, being an advocate of the theory of spirit return. Among his works are *Modern Views of Electricity*, *Pioneers of Science*, *Life and Matter*, *Electrons* and *The Ether of Space*, *The War and After*, *Raymond, or Life and Death*.

Lodge, THOMAS, dramatist, was born in Lincolnshire, England, in 1555, and died of the plague in 1625. He came up to London from Oxford University and entered Lincoln's Inn as a law student in 1584, and after becoming an actor and a soldier he studied medicine and practised in London. He published his tale of *Rosalynde, Euphues' Golden Legacie* (1590), which was the source of Shakespere's *As You Like It;* the drama of *Marius and Sylla* (1594); and in conjunction with Greene he wrote *A Looking Glasse for London and England* (1594).

Lodi (lō'dī), a town in North Italy, in the province of Milan, in a fertile plain on the right bank of the Adda, 18 miles southeast of Milan. The principal buildings are the cathedral, a Gothic structure of the twelfth century, and the Church of the Incoronata. The manufactures consist of majolica, silk, linen and the great article of trade is Parmesan cheese. Here Napoleon effected the famous passage of the Bridge of Lodi against the Austrians on May 10, 1796. Pop. of town 19,970; of commune 26,827.

Lodz (lōj; Russian, *Lodsi*), a town in Russian Poland, in the government of Piotrokow, 76 miles southwest of Warsaw, and next to it the most populous town in Poland. It has extensive trade and manufactures, especially in woolens and cottons. Pop. (1910) 418,650.

Loeb (leb), JACQUES, a German-American biologist, born in Germany, April 7, 1859, is considered the pioneer in experimental study of the physiology of protoplasm. Since 1910 he has been head of the department of experimental biology in the Rockefeller Institute for Medical Research. Among his works are *Studies in General Physiology* (1905); *Chemical Fertilization of the Animal Egg* (1909); and *The Mechanistic Conception of Life* (1912).

Loess (lēs or lō'es; German *loss*), a German term applied in geology to a finely comminuted sand or pulverulent loam of a yellowish color which occurs in a pleistocene alluvial deposit chiefly in the valleys of the Rhine, the Danube, the Missouri, and some other rivers. In China it reaches a depth of 1500 or 2000 feet.

Lofoden (lo-fō'den), or LOFO'TEN, a group of islands off the northwest coast of Norway, and stretching southwest to northeast about 175 miles. The chief value of the group is derived from the immense shoals of cod and herring which frequent them. The principal cod-fishery ends in April, when the herring-fishery begins and continues during the summer. Pop. 42,818.

Log, a contrivance used to measure the rate of a ship's velocity through the water. In its simplest form it is a piece of thin board, forming the quadrant of a circle of about 6 inches radius and balanced by a small plate of lead nailed on the circular part, so as to float perpendicularly in the water. One end of a line, called the *log-line*, is fastened to the log, while the other is wound round a reel. When the log is thrown out of the ship while sailing, as soon as it touches the water it ceases to partake of the ship's motion, so that the ship goes on and leaves it behind, while the line is unwound from the reel, so that the length of line unwound in a given time gives the rate of the ship's sailing. This is calculated by knots made on the line at certain distances, while the time is measured by a sand-glass running a certain number of seconds. The length

Ship's Log.

between the knots is so proportioned to the time of the glass that the number of knots unwound while the glass runs down shows the number of nautical miles the ship is sailing per hour. The need for a less cumbersome device having arisen, about 1834 Edward Massey, an Englishman, patented a screw or rotary log, whose recordings were read from a set of indicating dials. This with certain modifications was in use until 1861, when again a demand was made for a patent log which could be readily consulted from the deck. In response to this demand Walker, in 1873, introduced the Cherub log, a taffrail type, in which the varying speeds are read from a dial attached to the taffrail. Walker's Neptune log is an amplification of the Cherub form. The two principal American taffrail logs are the Negus and Bliss. The former bears a resemblance to the Cherub log, but the dial plate is horizontal, and the log is fitted with a governor.

Logan, JOHN A., statesman and soldier, was born in Jackson county, Illinois, in 1826. In the Mexican war he did good service, and in 1858 and 1860 was elected Congress. In the Civil war his servi s were very important, he being engaged in many battles, and being promoted from colonel to commander of a corps. In 1866 he was reelected to Congress, and was one of the seven members chosen to manage the impeachment of President Johnson. He served until 1871, hen he became Senator. He died in 1886.—His son, MAJOR JOHN A. LOGAN, took part in the Cuban war of 1898 and was slain in the Philippines in 1899.

Logan, SIR WILLIAM EDMOND, a Canadian geologist, born in 1798 at Montreal, educated chiefly in Europe. He devoted himself to the study of the geology of Canada, and was the chief of the Geological Survey of Canada from 1843 to 1871. He assisted also in the geological survey of Britain. He died in 1875 in Wales.

Logan, a city, capital of Cache county, Utah, 97 miles N. of Salt Lake City, situated at an elevation of 4507 feet. Here is a State agricultural college, a government experiment station, and the Brigham Young College. Pop. 7522.

Loganiaceæ (lō-gan-i-ā'se-ē), a nat. order of tropical dicotyledonous plants.

Logansport (lō'gans-port), a city, capital of Cass county, Indiana, is situated on the Wabash at the mouth of Eel River, 75 miles N. by W. of Indianapolis. It has good railroad connections and is an important shipping point for grain, lumber, fruit, pork, etc. It manufactures automobiles, motors, iron, brass and aluminum castings, machinery, water wheels, furniture, etc. Here is the Northern Indiana Hospital for the Insane. Pop. 20,000.

Logarithms (log'a-rithms). The common logarithm of a number is the index of the power to which 10 must be raised to be equal to the number. Thus $10^3=1000$, so that the logarithm of 1000 (usually written log. 1000) is 3. Now $10^1=10$, $10^2=100$, $10^3=1000$, $10^6=1,000,000$, and it is well known that $10^0=1$, $10^{-1}=0.1$, $10^{-2}=0.01$, etc., thus—

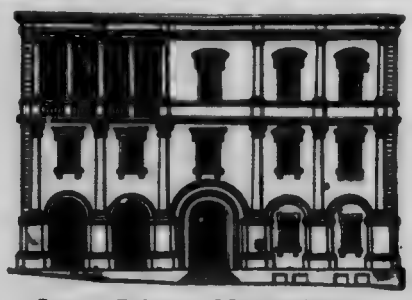
Log. 0.001	$= -3$	Log. 10	$= 1$
Log. 0.01	$= -2$	Log. 100	$= 2$
Log. 0.1	$= -1$	Log. 1000	$= 3$
Log. 1	$= -0$	Log. 10,000	$= 4$

It is evident that the logarithm of any number greater than 1 and less than 10 is fractional; the logarithm of any number greater than 10 and less than 100 is greater than 1 and less than 2. Again, the logarithm of any number less than 1 is negative. Suppose we wish to know the logarithm of the number 18.1. In a book of tables we only find the fractional part of the logarithm, it is .257679. Now 18.1 is greater than 10 and less than 100, so that its logarithm is greater than 1 and less than 2; hence log. 18.1 = 1.257679. The integral part of a logarithm is called its *characteristic*, the fractional part its *mantissa*. Logarithms make arithmetical computations more easy, for by means of a table of them the operations of multiplication, division, involution or the finding of powers, and evolution or the finding of roots, are changed to those of addition, subtraction, multiplication and division respectively. For instance, if x and y are the logarithms of any two numbers, the numbers are 10^x and 10^y; now the product of these numbers is 10^{x+y}, so that the logarithm of the product of two numbers is the sum of the logarithms of the numbers. Again, the quotient of the numbers is 10^{x-y}, so that the logarithm of the quotient of two numbers is the difference of the logarithms of the numbers. Again, 10^x raised to the nth power is 10^{nx}; so that the logarithm of the nth power of a number is n times the logarithm of the number. Logarithms of this kind are *common logarithms*, and were invented by Briggs; their *base*, as it is called, is 10. Logarithms were first used by Napier of Merchiston (see *Napier, John*), and he employed a base which is smaller than 10, namely, the number 2.7182818....., or

the sum of the infinite series $2+\frac{1}{2}+\frac{1}{2\times3}+\frac{1}{2\times3\times4}+$, etc. This base is denoted by *e* in mathematical treatises, and the *Napierian* logarithm of any number, say 7, is loge 7, to distinguish it from log. 7, which is the common logarithm, whose base is 10. The common logarithm of a number is found from the Napierian by multiplying by 0.43429448. Napierian logarithms are of great importance in the higher mathematics.

Log-book, a book kept in ships and into which the direction of the wind, course of the ship, state of the weather at all hours of the day, are daily transcribed at noon, together with every circumstance deserving notice that may happen to the ship or within her cognizance, either at sea or in a harbor, etc.

Loggia (loj'à), a word used in Italian architecture with several significations. First, it is applied to a hall open on two or more sides, where there are pillars to support the roof, such as the Loggia de' Lanzi in Florence. It is also applied to an open colonnade or arcade surrounding a court, or to an open gallery at the height of one or more stories in a building. The name loggia is also given to the large ornamental window, consisting of several parts, which is often seen in old Venetian palaces, and lastly, it is used to designate a small airy hall, usually open on all sides, constructed on the roof of an edifice.



Loggia, Palace at Montepulciano.

Logic (loj'ik), a department or division of mental science which has been differently defined by authorities. The older school of logicians agreed on the whole in considering it as mainly treating of reasoning and the operations of mind subsidiary to reasoning; and this definition sufficiently indicates the view of the science held by such logicians as Whately and Hamilton. According to them logic dealt only with the *form* of thought, that is, with what is common to all reasonings, judgments, and concepts respectively, and had nothing to do with the *matter*, that is, the subject or content of reasonings, judgments, etc. In this view the science of logic was merely *deductive*, and the syllogistic process, or the intellectual act performed in deducing particular truths from general truths already given, was the main subject of the science. It is evident, however, that in practical research there is another movement or process of the mind of at least equal importance,—viz., the process by which the mind reaches general truths from the observation of particulars. This latter is the *inductive* process, and on it, regarded as the more important element in inference and the ascertainment of truth, John Stuart Mill founded his new system of *inductive logic*. The nature of scientific evidence, the methods and principles involved in scientific research, are the chief subjects of study in this system of logic. Very different from both of these are the conceptions of logic given by the chief German philosophers. Kant, in declaring that only the matter (not the form) of experience was given to the mind, had recognized thought as the essential factor of cognition, and had initiated a new so-called *transcendental logic*, which was an analysis of the general conditions under which the objective world became cognizable. Thus the foundation was laid for a view of reality as in its very nature constituted by thought. Thought or the *ego* is itself the real, and there being no separate reality logic becomes the system of the forms in and through which thought or intelligence is realized. Logic thus appears, as in Hegel, a complete theory of knowledge and a metaphysic. The earliest work on logic is the Organon of Aristotle, who practically gave the science the shape it possesses. See *Deduction*, *Induction*, *Fallacy*, *Syllogism*, etc.

Logomania (log-u-mā'ni-a), a disease of the faculty of language generally associated with organic disease of the nervous structure, as in paralysis. In this disease, while conceptions and ideas remain clear, the power of associating these with the words by which they are expressed is lost, and the patient can either not give any names to his conceptions at all or expresses them erroneously. Sometimes one class of words is lost, and others retained. Thus a patient may forget his own name, or nouns only, and remember all other words. Sometimes he forgets only parts of the word, as terminations, and not unfrequently in another form he inverts his phrases.

Logos (log'os; Greek, word, thought, reason), in Christian theology, a word used in certain passages of the

Scriptures, which has been the source of continual disputes ever since the third century of our era. The passage in the Bible which gives rise to this discussion is the opening of the Gospel of St. John: 'In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God. All things were made by him, and without him was not anything made that was made,' etc. In the Greek text the expression here translated *Word* is *logos*, and the question is, what are we here to understand by *logos*, whether a person of the Deity, the creative intellect of God, or the Son, through whom he created, or the divine truth which was to be revealed, or something else?

Logroño (lo-grōn'yō), a town of Spain, capital of the province of same name in Old Castile, on the right bank of the Ebro, which is crossed by a new stone and a new iron bridge. It is well built, and has several interesting churches. Pop. 19,237.—The province, in the north, where it borders the Ebro, is level and fertile, but in the south is generally mountainous and barren. It is rich in minerals, but is quite undeveloped in this respect. Area, 1946 square miles; pop. 189,376.

Logwood (log'wud), a popular name for the *Hæmatoxylon Campechianum*, a tree belonging to the nat. order Leguminosæ, which grows in moist and swampy places in Central America, and particularly round the Bay of Campeachy; but is now naturalised in Jamaica and many of the West Indian islands. The tree is usually from 40 to 50 feet high, with pinnate leaves and small yellowish flowers. The wood is red in color, tinged with orange and black, so heavy as to sink in water, and susceptible of receiving a good polish. It is used chiefly as a dyewood, the trees being cut down, the bark and alburnum removed, and the hard center parts cut into 3-foot-long logs. To obtain the coloring matter it is hewn into much smaller pieces, and ground or rasped to small chips, or to a coarse powder. The aqueous extract is muddy and of a reddish-brown color. By acids the red color is made paler; by alkalies it is converted to purple. By mordanting the fabric with iron, black is produced; with alumina, violet and lilac; with copper, blue; and with chromium, a black or green. The coloring power of logwood depends chiefly on a crystalline ingredient called hæmatoxylin. It is employed in calico printing to give a black or brown color, and also in the preparation of some lakes. An extract of logwood is used in medicine as an astringent.

Logwood (*Hæmatoxylon Campechianum*).

Loheia (lo-hā'yā), a seaport town of Arabia, Yemen on the Red Sea, 130 miles W. N. W. of Sana. It has a trade in coffee, and a pop. of about 8000.

Lohengrin (lō'en-grin), the hero of a German poem of the end of the thirteenth century, represented as the son of Parcival and one of the guardians of the Holy Grail. Sent by King Arthur to help the Princess Elsa of Brabant, he arrives in a vehicle drawn by a swan, delivers the princess from captivity, and marries her; accompanies the emperor in a campaign against the Hungarians, and fights against the Saracens. He then returns to his bride at Cologne, but being pressed by her to state his origin he is prevailed upon to tell it, after which he must, in terms of his vow, return home to the Grail. The legend has been made the subject of a well-known opera by Wagner.

Loir (lwär), a river of N. W. France, rising in dep. Eure-et-Loir, traversing Loir-et-Cher and Sarthe, and falling into the Sarthe a few miles above its junction with the Loire; length, 180 miles, partly navigable.

Loire (lwär; anc. *Liger*), the largest river of France, which it divides into two nearly equal portions. It rises on the western slope of the Cevennes, in the department of Ardèche, and flows generally N. N. W. and W. till it falls into the Bay of Biscay below Nantes. Its principal affluents on the right are the Arroux, Nièvre, Maine, etc.; on the left the Allier, Vienne, Cher, Indre, etc. Below Nantes, where it first feels the influence of the tide, it is more an estuary than a river, and is studded with islets. Above Nantes navigation is much impeded by shallows. Its whole course is about 645 miles, of which about 450 miles are navigable. The river is much subject to disastrous inundations, and dikes (levées) have been constructed along its course. It is connected by canals with the Saône, Seine and Vilaine. Its name

appears in those of a number of departments.

Loire, a central department of France; area, 1853 square miles. The department occupies the upper part of the Loire basin, and consists of the fertile plains which extend on both sides of the river, forming its valley, and long ridges of the Cevennes, which hem the valley in on every side. More than one-half the surface is arable. A good deal of wine is produced, but ranks only as a *vin ordinaire* of good quality. Coals are raised to a large extent, part of the department being in the coal-field of the Loire, the most important in France. Iron is smelted, and extensively manufactured into steel and articles of hardware, etc., employing 25,000 hands; silk, ribbons, velvet, etc., are also made, the silk manufacture alone employing about 12,000 workers. The capital and great center of industry is St. Etienne; other towns are Roanne and Montbrison. Pop. (1906) 643,943.

Loire, Haute- (ōt-lwär; Upper Loire), a department of South-eastern France; area, 1931 square miles. It is traversed by the Loire, is surrounded on all sides by lofty mountains, which belong to the Cevennes, and has the character of a plateau intersected by deep river valleys. The mountains are generally covered with forests, in which wild boars, wolves, foxes, deer, etc., abound, or with verdant pastures, on which herds of cattle are reared. Some wine is produced; but the chief industry is the manufacture of various sorts of lace, largely a home industry. Le Puy is the capital. Pop. (1906) 314,770.

Loire-Inférieure (lwär-an-fā-ri-eur; Lower Loire), a western maritime department of France, intersected by the lower Loire and its estuary; area, 2694 square miles. The surface is flat. The coast is much indented, and is covered with salt marshes which yield a considerable quantity of salt. Lagoons and lakes are very numerous. The largest is Grandlieu, which has an area of 24 square miles. The soil is generally productive, yielding grain, sugar-beet and grapes, from which large quantities of wine are produced. The oak forests pasture great numbers of swine, and bee-keeping is a considerable industry. The fisheries are extensive. Shipbuilding and the allied trades are carried on to a considerable extent. Smelting furnaces, machine-works, sugar refineries, are also in operation. To these may be added tanneries, glassworks, potteries, paper-mills, etc. Wine, salt, corn, cattle, etc., are exported. The principal ports are Nantes and St. Nazaire. Nantes is the capital. Pop. (1906) 666,748.

Loiret (lwä-rā), a central department of France; area, 2629 square miles. The surface is partly flat, partly undulating, with scarcely any hills, and is traversed by the Loire, which divides it into two unequal portions, the northern of which is the larger, and is fertile and well cultivated, while the southern is bleak and sterile. The Loiret is an unimportant tributary of the Loire. The chief products are grain and wine. Pottery and porcelain are the chief manufactures. Orléans is the chief town. Pop. 364,999.

Loir-et-Cher (lwär-ā-shär), a central department of France; area, 2479 square miles. It consists almost entirely of extensive plains, traversed by the Loire, Loir and Cher, all navigable rivers. The soil is generally fertile. More than one-half of the whole is arable, and less than one-eighth waste. Cereals of all kinds, hemp, beet-root for sugar, wine, fruits, are produced, and horses, cattle, and sheep are reared on excellent pastures. The capital is Blois. Pop. (1906) 276,019.

Loja (lō'hä), a city of Ecuador, in the valley of Casibamba, 230 miles s. of Quito, is well built, has a college, some manufactures, and a trade in cinchona bark. Pop. 10,000.

Loja, or Loxa (lō'hä), a town in Spain, Andalusia, in the valley of the Genil, 25 miles w. s. w. of Granada. The streets are steep and very irregular, and the houses mostly of mean appearance. The town with its castle was an important military post during the Moorish wars. Pop. 19,143.

Lok, or Loki, in Scandinavian mythology, the evil deity, father of Hel or Hela, goddess of the infernal regions. He is a personification of the principle of evil, described as of handsome appearance, but perpetually engaged in works of wickedness partly directed against the other gods.

Lokeren (lō'ke-ren), a town of Belgium, in the province of East Flanders, on the Durme, has manufactures of cottons, lace, soap, tobacco, etc. Pop. (1904) 21,869.

Lokman (lok-man'), a name that figures in the traditions of the Arabians as that of a sage or prophet. In the Koran there is an account of a Lokman the Wise who lived at a time anterior to that of King David. He is represented as the author of a collection of fables, which, however, are of a later date than the first century of the Hejra.

Loli'go. See *Calamary.*

Lolium (lō'li-um), a genus of grasses of the tribe Hordeæ. See *Darnel* and *Rye-grass*.

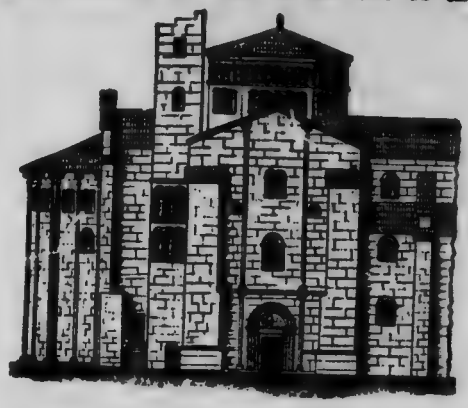
Lolland. See *Laaland*.

Lollards (lol'ärdz), a name which arose in the Netherlands about the beginning of the fourteenth century, and was applied as a term of contempt to various sects or fraternities deemed heretical, being probably derived from the Low German *lollen*, to sing in a low tone. The name became well known in England about the end of the fourteenth century, when it was applied to the followers of Wickliffe, and to others more or less influenced by his teaching. The Wat Tyler revolt of 1381 was directly connected with Lollardism, and latterly the Lollards drew upon themselves the enmity of the civil powers, and numbers of them were put to death, especially during the reign of Henry V, when apparently another revolt was intended.

Lomami (lō-mä'mē), a river of Southern Africa, an important navigable tributary of the Congo, which it enters a little below Stanley Falls, after flowing nearly parallel to its upper course.

Lombard (lom'bard), PETER, or PETRUS LOMBARDUS, one of the most celebrated of the schoolmen, born near Novara, in Lombardy, about the year 1100. He was a scholar of Abelard in the University of Paris, became a teacher of theology, and at last, in 1159, bishop of Paris, where he seems to have died in 1164. His work *Sententiarum Libri Quatuor* is a classified collection of the opinions of the fathers on points of doctrine, with a statement of the objections made to them, and the answers given by church authorities. Hence he is known as the 'Master of Sentences.'

Lombard Architecture, the form which the Romanesque style of architecture assumed under the hands of the Gothic invaders and colonists of the north of Italy, comprising the buildings erected from about the beginning of the ninth to the beginning of the thirteenth centuries. It forms a connecting link between the Romanized architecture of Italy and the Gothic of more northern countries. The most characteristic feature of the churches built in this style is the general introduction and artistic development of the vault, that feature which afterwards became the formative principle of the whole Gothic style. In the Lombard architecture also pillars consisting of several shafts arranged round a central mass, and buttresses of small projection, appear to have been first employed. The tendency to the prevalence of vertical lines throughout the design, instead of the horizontal lines of the classic architecture, is also characteristic, as well as the use of the



LOMBARD ARCHITECTURE.
Transept, Apse and Dome of St. Michael, Pavia.

dome to surmount the intersection of the choir, nave and transepts. Mr. Fergusson remarks: 'Generally speaking, the most beautiful part of a Lombard church is its eastern end. The apse with its gallery, the transepts, and, above all, the dome that almost invariably surmounts their intersection with the choir, constitute a group which always has a pleasing effect, and is very often highly artistic and beautiful.' As examples of Lombard architecture may be mentioned the church of St. Michael, Pavia; San Zenoni, Verona; and the atrium of San Ambrogio, Milan.

Lombards, LONGOBARDI, or LANGOBARDI (so called either from the *long barte* or spear which they carried, or from the *long beards*), a Germanic or Teutonic people who at the beginning of the Christian era were dwelling on the Lower Elbe. They make little appearance in history till the sixth century, when, under their king, Alboin, they entered Italy in April 568, and, with the help of Saxons and others, conquered the northern portion, which hence received the name of Lombardy. Alboin was assassinated in 573 (see *Alboin*), and after some years of great confusion Autharis was recognized in 585 as king. He was a warlike and politic ruler, who gained the good-will of the subject Roman population, and instituted a better system of government than had hitherto existed. He married Theodelinde, a Frankish princess, who began the process of converting the Lombards from Arianism to the orthodox faith. The only king of

note among the successors of her family was Rothari, who in 643 promulgated a system of laws, which, with subsequent additions, became among German jurists the basis of the study of law during the middle ages. From 713 to 744 the Lombards had a powerful king in the person of Liutprant, who extended his sway, at least temporarily, over the whole of Italy. From that time the power of the Lombards gradually declined, and finally Charlemagne captured Pavia after a six months' siege, and put an end to the Lombard Kingdom (773 or 774), the last monarch being Desiderius.

Lombardy (lom'bär-di), the part of Upper Italy which took its name from the Lombards (see *Lombards*), and which at first extended from the Adriatic to the Savoyan Alps. After the overthrow of the Lombard Empire a number of independent duchies and republics, Mantua, Milan, Venice, Genoa, etc., were gradually formed, originally as fiefs of the Holy Roman Empire, but soon practically independent. On the west side the growth of the house of Savoy ultimately absorbed all minor principalities to the line of the Ticino, while the extension of the Venetian authority during the sixteenth century over the districts to the east restricted the use of the name of Lombardy to the country west of the Lago di Garda and the Mincio, a district which passed under the dominion of Austria in 1706, and was ceded by that power to Italy in 1859. Lombardy is now the name of an Italian department (compartimento), embracing eight provinces (Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia and Sondrio), containing an area of 9386 square miles and a pop. of 4,334,099.

Lombok (lom-bok'), an island belonging to the Dutch, in the Indian Archipelago. It lies between Bali on the west and Sumbawa on the east, and has an area of about 3136 square miles. Between the two ranges which traverse the island, one of them rising to the height of 11,500 feet, there is a plain fertile in rice, cotton, maize, coffee and tobacco. There are several active volcanoes. The fauna and flora have strong Australasian affinities, Lombok being east of Wallace's Line. The ruling class are Brahmans, but the mass of the population is Mohammedan. The capital is Mataram on the west coast. Pop. 370,510.

Lombroso (lom-brō'sō), CÆSAR, anthropologist, born at Venice in 1836; died in 1909. He held professorships at Pavia, Pasaro and Turin, and became a noted authority on insanity and on crime in its relation to the physical organization. Of his works *L'Homme Criminel* is the most important and unfolds his theory, a congenital tendency to crime. In addition to his works on criminology, he wrote two on pellagra, a disease long prevalent in Italy.

Loménie (lo-mā-nē), ETIENNE CHARLES DE, COUNT OF BRIENNE, cardinal, archbishop and minister of state in France, born in 1727; died in 1794. At the first breaking out of the revolutionary discontents in France, Brienne, then archbishop of Toulouse, was among the most active of the reform agitators, and was ultimately entrusted with the finances, in which he failed ignominiously, and was dismissed in 1788. He was arrested by the revolutionary party, and died in prison.—His brother, ATHANASE LOUIS MARIE, born in 1730, entered the army, became a general, and was made war minister at the same time as his brother was finance minister, retired from office with him, and was guillotined May 10, 1794.

Lomond (lō'mund), LOCH, a beautiful lake of Scotland, renowned for its scenery, lying within the counties of Stirling and Dumbarton. Its length is about 24 miles; the breadth at the lower or southern end 7 miles, at the upper end considerably under half a mile. The lake is almost entirely surrounded with hills, one of which, Ben Lomond, is 3192 feet high; and its surface is studded with numerous islands. The greatest depth is in the narrower part of the lake, where in some parts it reaches 600 feet. Fish, including salmon, trout, pike, etc., are abundant.

Lomza (lom'zha), a town of Russian Poland, capital of the government of the same name, on the Nareff, 80 miles N. E. of Warsaw. Pop. 22,428. The government of Lomza covers an area of 4666 square miles, mostly of a flat and fertile soil. Pop. 653,100.

London (lun'dun), the capital of the British Empire and the largest city in the world, is situated in the southeast of England on both sides of the River Thames, which winds through it from west to east. The river is crossed by numerous bridges, and is deep enough to allow large vessels to come up to London Bridge (the lowest of them except the movable Tower Bridge), the stream here being 266 yards wide. It is difficult to assign any exact limits to London on account of its straggling form and numerous suburban extensions; but it may be said to stretch from east to west about 14 miles, from north to south about 10. Its area may be stated at 117 square miles,

The population within this area was 3,816,483 in 1881, 4,536,541 in 1901, and 4,522,961 in 1911. If we consider what is known as Greater London, embracing the City of London Police District, the area is 693 square miles and the population in 1911 was 7,252,963.

General Features.—The greater portion of London lies on the north side of the Thames, in the counties of Middlesex and Essex, mainly the former, on a site gradually rising from the river, and marked by several inequalities of no great height; on the opposite bank, in the County of Surrey and partly in Kent, the more densely built parts cover an extensive and nearly uniform flat. The city proper, or City of London aside from its surrounding boroughs, is a separate municipality, having a civic corporation of its own, at its head being the Lord-mayor of London. It occupies little over one square mile, and has a resident population of 26,923. Westminster, associated with the sovereigns and parliaments for over 800 years, borders with the city on the west: while across the river from the city lies the ancient quarter of Southwark, or 'The Borough.' Besides these, London consists of a great number of quarters or districts, the most important of which now form separate Parliamentary constituencies, though there are many other minor districts, the names of which are also perfectly familiar to the outside world, such as Whitechapel, Spitalfields, Clerkenwell, Pimlico, Bloomsbury, Bermondsey, etc. Another rough division of London is into the West End or fashionable quarter, the residence of the wealthy, and the East End, the great seat of trade and manufactures.

London, on the whole, may be called a well-built city, brick being the material generally employed, though many public and other edifices are built of stone. In some streets the brick fronts are made to imitate stone by being coated with cement. The streets are generally well kept and well paved and lighted, but, except in some of the more recent quarters, the general appearance of London is not attractive, much of the effect of the fine buildings being lost by overcrowding and the want of fitting sites. What generally most strikes a stranger to London is its immense size, which can only be grasped by actually traveling about, or by obtaining a view from some elevation, as Primrose Hill in the northwest, or the dome of St. Paul's Cathedral near the center, the most conspicuous building in the metropolis. Other striking and also attractive features of London are the parks, especially Hyde Park and Regent's Park, so valuable as breathing spaces; and the handsome and massive stone embankments along the Thames, forming wide roadways and promenades bordered by trees for long distances. As the capital of the British Empire London is from time to time the residence of the sovereign and court. It contains the buildings for the accommodation of Parliament and all the great government departments. It is the chief intellectual center of Britain, if not of the world, and is equally great as a center of commerce, banking and finance generally. Many of the institutions and objects of interest noticed in the following paragraphs are also treated in separate articles.

Main Streets, Bridges, etc.—Although in the different districts of London, with the exception of the parts most recently built, there are numerous narrow and crooked streets, yet the whole extent of the metropolis is well united by trunk lines of streets in the principal directions, which render it comparatively easy for a stranger to find his way from one district to another. Piccadilly and Pall Mall; the Strand and its continuation, Fleet street; Oxford street and its continuations, Holborn, Holborn Viaduct and Cheapside, are among noteworthy streets running east and west; while of those running north and south, Regent street, perhaps the handsomest street in London, and the location of fashionable shops, is the chief. The Thames embankment on the north or Middlesex side, known as the Victoria Embankment, also forms a magnificent thoroughfare, adorned by important buildings, and at different points with ornamental grounds and statues. A number of magnificent bridges cross the Thames. The lowest is the Tower Bridge, a 'bascule' bridge opening by machinery so as to let ships pass through. The others most remarkable in upward order (exclusive of railway bridges) are London Bridge, 900 feet long, and built of Aberdeen granite; Southwark Bridge, and Blackfriars' Bridge, all connecting the city with Southwark; Waterloo Bridge, 1380 feet long, consisting of nine elliptical arches of Aberdeen granite; Westminster Bridge, an elegant structure of iron, 1200 feet long, crossing the river from Westminster to Lambeth: the Lambeth and Vauxhall bridges, the Chelsea Suspension Bridge, and the Albert Bridge. The two banks of the river are also united by the Thames Tunnel, a tunnel under the river 2 miles below London Bridge, opened in 1843, and intended for pedestrians, but now traversed by a railway. Of later date are the Blackwall and several other tunnels.

Parks and Squares.—The chief parks are in the western portion of the metropolis, the largest being Hyde Park and Regent's Park, which, together with St. James' Park and the Green Park, are royal parks. The most fashionable is Hyde Park, containing about 400 acres. It is surrounded by a carriage-drive 2½ miles long, has some fine old trees, large stretches of grass, and contains a handsome sheet of water sadly misnamed the Serpentine River. Kensington Gardens (360 acres), with which Hyde Park communicates at several points, are well wooded and finely laid out. St. James' Park, 83 acres, and the Green Park, 71 acres in extent, adjoin Hyde Park on the southeast. Regent's Park, in the northwest of London, north of Hyde Park, containing the gardens of the Zoölogical Society and those of the Royal Botanic Society, covers an area of 470 acres. The Zoölogical Gardens contain the largest collection in the world. There are, besides, Victoria Park in the northeast of London, Battersea Park in the southwest, West Ham Park in the extreme east, Greenwich Park at Greenwich, etc. Of the squares the most central and noteworthy is Trafalgar Square, with Charing Cross adjoining. Some of the squares are planted with fine trees.

Monuments.—Among the public monuments are 'The Monument' on Fish Street Hill, London Bridge, a fluted Doric column 202 feet high, erected in 1677 in commemoration of the great fire of London; the York Column, in Waterloo Place, 124 feet high; the Guards' Memorial (those who fell in the Crimea), same place; the Nelson Column, in Trafalgar Square, 176½ feet high, with four colossal lions by Sir E. Landseer at its base; the national memorial to Prince Albert in Hyde Park, probably one of the finest monuments in Europe, being a Gothic structure 176 feet high, with a colossal statue of the prince seated under a lofty canopy; Cleopatra's Needle on the Thames Embankment; a handsome modern 'cross' at Charing Cross; numerous statues of public men, etc.

Public Buildings.—Among the royal palaces are St. James', a brick building erected by Henry VIII; Buckingham Palace, the King's London residence, built by George IV; Marlborough House, the residence of the Prince and Princess of Wales; Kensington Palace, a plain brick building, the birthplace of Queen Victoria. These are all in the west of London. Lambeth Palace, the residence of the Archbishops of Canterbury, is situated on the Surrey side of the river. On the north bank of the Thames stand the Houses of Parliament, a magnificent structure in the Tudor Gothic style, with two lofty towers. The buildings cover about eight acres, and cost £3,000,000. Westminster Hall, adjacent to the Houses of Parliament, a noble old pile built by William Rufus, was formerly the place in which the Supreme Courts of Justice sat, but is now merely a promenade for members of Parliament. In and near Whitehall in the same quarter are the government offices, comprising the Foreign, Home, Colonial and India Offices, the Horse Guards and Admiralty. Somerset House, which contains some of the public offices, is in the Strand. The post-office in the city occupies two spacious and handsome buildings. Adjoining the city on the east is the Tower, the ancient citadel of London, which occupies an area of 12 acres on the banks of the Thames. The most ancient part is the White Tower, erected about 1078 for William the Conqueror. One of the most important of recent public buildings is the new Law Courts, a Gothic building at the junction of the Strand and Fleet street. Other noteworthy buildings are the Bank of England; the Royal Exchange; the Mansion House, the official residence of the Lord-mayor; the Guildhall, the seat of the municipal government of the city; the four Inns of Court (Inner and Middle Temple, Loncoln's Inn, Gray's Inn); etc.

Churches.—Among the churches the chief is St. Paul's Cathedral, completed in 1710 by Sir Christopher Wren. It is situated in the city, occupies the summit of Ludgate Hill, and is a classic building 510 feet in length, with a dome 400 feet in height. Westminster Abbey, one of the finest specimens of the pointed style in Great Britain, dates from the reign of Henry III and Edward I. It adjoins the Houses of Parliament, is 531 feet long, including Henry VII's chapel, and 203 feet wide at the transepts. Here the kings and queens of England have been crowned, from Edward the Confessor to George V. In the south transept are the tombs and monuments of great poets from Chaucer downwards, whence it is called 'Poets' Corner'; and in other parts are numerous sculptured monuments to sovereigns, statesmen, warriors, philosophers, divines, patriots and eminent individuals generally, many of whom are interred within its walls. Among others of the old churches are St. Bartholomew's in West Smithfield; the Chapel Royal, Savoy; St. Andrew's, Undershaft; St. Giles's, Cripplegate; St. Margaret's, Westminster; St. Stephen's, Walbrook; the Temple Church, Bow

Church, St. Bride's in Fleet street. The Roman Catholic Cathedral in Westminster and Southwark may also be mentioned.

Places of Amusement.—These are naturally exceedingly numerous. The principal theaters are: Covent Garden and Her Majesty's Theater, the homes of opera; Drury Lane and the Lyceum, identified with the higher drama; the Strand, Criterion, Gaiety and Toole's, well known for farce and burlesque; the Haymarket, Vaudeville, St. James' and Court for comedy; the Adelphi, Princess', and Olympic for melodrama; the Savoy, Avenue, and Comedy for opera-bouffe. The chief musical entertainments are given in St. James' Hall and the Concert Hall at the Sydenham Crystal Palace (see *Crystal Palace*). The Albert Hall, Kensington, capable of holding an audience of 8000 persons, is also used for concerts, etc.

Museums, etc.—Among museums and galleries the principal is the British Museum, the great national collection, in a very central position as regards the rest of the metropolis. It contains an immense collection of books, manuscripts, engravings, drawings, sculptures, coins, etc. (See *British Museum.*) The South Kensington Museum is a capacious series of buildings containing valuable collections in science and the fine and decorative arts, and there is a branch museum from it in Bethnal Green, in the East End. (See *Kensington Museum.*) The natural history department of the British Museum occupies a fine Romanesque building at South Kensington. The India and the Patent Museums are also at South Kensington, and here is being built the Imperial Institute, partly intended as a museum of home and colonial products. The Sloane Museum contains many valuable objects of art, etc. The chief picture-galleries are the National Gallery, in Trafalgar Square, one of the great galleries of the world (see *National Gallery*), the collection [illegible] ch Kensington Museum, and the National Portrait Gallery. Other museums are the United Service, the Geological, the College of Surgeons, etc. The chief libraries are the British Museum, Lambeth Palace library, the Guildhall library, Sion College library, the London Library, London Institution library, besides large circulating libraries. Many free libraries have recently been established.

Educational and Scientific Institutions.—The chief educational institutions are the Univeristy of London, an examining and degree-conferring body only (see *London, University of*); and University College and King's College, the students of which take their degrees at London University, since London has no university that both teaches and confers degrees. Other institutions are denominational colleges for theology (in some combined with general education); institutions for professional education, as the Royal Naval College, Greenwich; the Royal Military Academy, Woolwich; the Royal School of Mines; the Royal College of Physicians and the Royal College of Surgeons, which grant medical diplomas after examination; the medical schools attached to the various hospitals (see below); Royal Academy of Painting, etc.; Royal Academy of Music; Royal College of Music; Trinity College, chiefly for music; several colleges for women; City and Guilds Institute for Technical Education; the Art Training School, South Kensington. An institution of a unique kind is the People's Palace for East London, opened in 1887, and designed partly for educational and partly for recreative purposes. Of the numerous societies for the promotion of science, art, learning, etc., we need only mention the Royal Society, the oldest, incorporated by Charles II in 1663.

Hospitals, etc.—Among hospitals and charitable institutions the chief are the three great endowed hospitals, St. Bartholomew's Hospital, in West Smithfield; Guy's Hospital, Southwark; and St. Thomas' Hospital, Lambeth, on the Thames Embankment opposite the Houses of Parliament. Other hospitals are St. George's Hospital, Middlesex Hospital, Westminster Hospital, Charing Cross Hospital, King's College Hospital, University College Hospital, St. Mary's Hospital. There are medical schools attached to all the above institutions. Bethlehem Hospital (Bedlam), in St. George's Fields, south of the river, is the chief hospital or asylum for lunatics. The Foundling Hospital, Chelsea Hospital, and Greenwich Hospital are institutions by themselves.

Communications, Trade, etc.—London is supplied with a vast network of surface railways, in addition to a host of cabs and omnibuses, and with underground railways, known as the Metropolitan and Metropolitan District railways, with several lines of electric trackage. Numerous small steamers ply on the Thames, touching at all important points on both sides of the river. All the great railways have termini in London, and their stations correspond with the magnitude of the traffic. The principal markets are Billingsgate for fish; Covent Garden for vegetables, flowers, etc.; Leadenhall for poultry,

game, etc.; Smithfield for dead meat, poultry and fish; the Borough market, Southwark. The manufacturing industries of London, though not to be compared with its commercial importance, are extensive. It contains the largest breweries and distilleries in the kingdom; and sugar refining, manufactures in metal, including plate, jewelry, watches, etc., the making of clothes and of boots and shoes, are extensively carried on. There are large engineering and chemical works. Printing, publishing and journalism have their chief seat here. London has long been the greatest center of commerce in the world, though some other cities, as New York, Liverpool and Hamburg, have come into close competition with it. A most extensive trade by sea is carried on between Britain and the Continent, the East Indies and China, Africa, America and Australia, and there is an immense coasting trade. The docks are very extensive, comprising numerous basins and their accompanying accommodation on both sides of the river below London Bridge, and having a total water area of over 600 acres. London is inferior to Liverpool in the value of its exports, but otherwise considerably surpasses it in trade.

Sanitary Condition, etc.—London is one of the healthiest of the large cities of the world, the annual death rate per 1000 being in recent years about 20.5. The sewerage system is necessarily gigantic, there being altogether about 250 miles of sewers. There is no single system of water supply, the water being furnished by several companies from the Thames, the Lea, and other sources. The chief supply is that brought by the New River Company, established in the time of James I, and obtaining its supplies partly from springs and artesian wells, but mainly from the River Lea at Hertford. These companies have a total capital of about £14,000,000. The water supply at present is barely sufficient, and the quality of the Lea and Thames water is defective. The gas is also supplied by several companies, their capital amounting to about £13,000,000.

Civic Administration.—The City of London proper is governed by a lord-mayor, chosen annually, and by twenty-five aldermen, four sheriffs and two hundred and thirty-two common councilmen. The lord-mayor is elected by the members of the city guilds or companies, known as the liverymen, and numbering about 7000. He receives an allowance of £10,000 a year, which does not usually, however, meet the expenses he incurs. The other districts of London are variously governed. A body known as the Metropolitan Board of Works, created in 1855, took charge of all general improvements, and had the management of all public works in which the taxpayers of the metropolis had a common interest up to 1889, when it was superseded by the London County Council under the Local Government Act of 1888. The administrative County of London comprehends the whole of the metropolitan Parliamentary boroughs, which elect 118 county councilors; there being also 19 aldermen (or a number not to exceed one-sixth of the councilors). The City of London is unaffected by this change, except that its sheriffs are no longer sheriffs of Middlesex, and the right of appointing certain judicial officers is transferred from the corporation to the crown.

History.—In the reign of Claudius (41-54 A.D.) the southern part of Britain was made a Roman province, and London became a Roman station. In the time of Constantine, about 306, the Romans fortified and walled it, and it eventually became a great commercial city. After the withdrawal of the Roman legions, London remained for a considerable time in possession of the Britons, but was at length taken by the Saxon invaders, became the capital of the East Saxons, and under Egbert of Wessex (828-837) had the position of capital for all England south of the Forth. In 851 it was taken by the Danes, but was regained by Alfred in 884. Under Cnut and his son Harold many Danish colonists settled in London, contributed largely to the development of its commerce, and practically made it the capital of England. At the Conquest London submitted to William, and received from him a charter, which is still preserved. It also obtained charters from Henry I, Stephen, Richard I and John. The first mayor was Henry Fitz Alwin, 1189-1212. In 1218 the forest of Middlesex was cleared, and that portion of London north of the city began to be built. In 1285, London having outgrown its water supply, leaden pipes were laid to convey water from Tyburn Brook. In 1349 and 1361 London was visited by the plague. In 1381 much damage was done during Wat Tyler's insurrection. In the fifteenth century some of the principal streets were paved; the plague or sweating sickness raged in several years of this century. In the sixteenth century Westminster was connected with the city by a row of noblemen's mansions along the river, the last of which, Northumberland House, recently made way for the Grand Hotel. St. Bartholomew's Hospital and St. Thomas' Hospital were now founded.

and theaters began to be an important feature. In the seventeenth century the metropolis was greatly extended. The New River was completed, and many houses were supplied with water; sewers were dug; pavements were laid down for passengers; and hackney-coaches came into general use. But the streets were so narrow and dirty, and the houses in so filthy a state, that the city was scarcely ever exempt from the plague, which sometimes committed great ravages, the great plague, which lasted from December, 1664, to January, 1666, carrying off about 69,000 persons. In 1666 the great fire broke out, and spread over 336 acres, destroying 13,200 houses, ninety churches, and many public buildings. Population and trade now rapidly increased, partly from the immigration of French Protestants driven from their country by the revocation of the Edict of Nantes. In the eighteenth century the metropolis steadily advanced in extent, prosperity and splendor. After the accession of George II in 1727 two new bridges, Blackfriars' and Westminster, were added to the single bridge which at that time spanned the Thames in the metropolis. In the middle of the century the population was about 600,000. In 1759 the British Museum, founded on Sir Hans Sloane's collections purchased by the government, was opened. About this time the houses began to be numbered and the names of streets marked at the corners. In 1781 the Gordon riots took place, when the mob was in possession of London for two days, and committed great havoc. In 1807 gaslight was introduced in the streets. In 1812 the extension of the metropolis about Regent's Park commenced, and an act for the formation of Regent street was obtained in 1813. In 1817 Waterloo Bridge was opened; in 1819 Southwark Bridge. In 1831 new London Bridge was opened. In 1834 the old Houses of Parliament were burned down; the present buildings were begun in 1840. In 1851 the great international exhibition was held in Hyde Park, and led to numerous exhibitions of a similar kind. Since then the history of London has been a story of continued growth and progress, the most notable improvements being the formation of the Thames Embankments, and the Holborn Viaduct.

TREATY OF LONDON. See *Balkan War*.

London, a town of Canada, the capital of Middlesex county, Ontario, on the Thames and the Grand Trunk and Canada Pacific railways, 121 miles west of Toronto. It was first laid out in 1825, and is well and regularly built, with some handsome public buildings, among which are the city hall, courthouses, Western University, Normal School, and other colleges. There are manufactures of stoves and cigars, brass works, iron foundries, chemical works, and other industries. It is the center of a rich agricultural region with an active trade in agricultural produce. Pop. (1913) 55,026.

London, JACK, novelist, was born at San Francisco in 1876. He went to sea as a common sailor in 1892; tramped through the United States and Canada for sociological study in 1894; served as journalist and lecturer, and was a war correspondent in the Russo-Japanese war. His books and stories have been numerous and are strikingly original in style, dealing with the primitive passions and conditions. Among them are *The Son of the Wolf*, *The People of the Abyss*, *The Call of the Wild*, *White Fang*, *Before Adam* and *The Iron Heel*. He died Sept. 1, 1916, at Glen Ellen, Calif.

London, UNIVERSITY OF, was originally established as a joint-stock undertaking in 1825. In 1836 two charters were granted, one to a university retaining the name of London University, and having power to examine and grant degrees, another to a teaching body occupying the original premises at Gower street, which took the name of University College, and now prepares students for obtaining the degrees conferred by the university. New and supplementary charters were granted in 1858, 1863 and 1878, the last admitting women to all degrees and prizes granted by the university. The university admits as candidates for examination any person who is above sixteen years of age, and confers degrees in all departments of knowledge except theology. Provincial examinations are held in a number of different towns.

London Clay, the most important of the Eocene tertiary formations of Great Britain, largely developed in the valley of the Thames under and around the metropolis. This formation consists of a bluish or brownish clay containing layers of argillaceous nodular limestone. The shells, fruits, etc., found in the London clay mostly belong to genera now inhabiting warmer seas than those of Britain.

Londonderry (lun'dun-dér-i), a city and seaport in the north of Ireland, capital of the county of the same name, on the river Foyle, which is here crossed by an iron bridge 1200 feet long. The city stands partly on a hill crowned with the Protestant cathedral, and still retains its old walls, though the buildings now stretch far be-

yond them. There is also a handsome Roman Catholic cathedral. The chief educational institution is Magee College, which gives courses in arts and theology, the latter specially adapted for Presbyterian students. The harbor is commodious, and vessels of large tonnage can discharge at the town. An extensive trade is carried on, linen is manufactured, and there are shirt factories, timber mills, grain mills, foundries, distilleries, etc. Derry took origin in a monastic establishment erected by Columba in 546. The corporation of London, which obtained a grant of the town from James I, fortified it, and gave it the name of Londonderry. Here the Protestants of Ulster took refuge at the Revolution, and made a famous defense against the forces of James II, the siege lasting from April 21 till August 1, 1689. Pop. 40,799. —The COUNTY is bounded on the north by Lough Foyle and the Atlantic Ocean, elsewhere by Tyrone, Lough Neagh and Antrim; area, 816 square miles. It is very diversified in surface, consisting partly of wild and bleak tracts of mountain and moor, partly of flat alluvial lands. The fisheries are important. The staple manufacture is linen. A great part of the county belongs to several London livery companies, having been granted to them by James I in 1609, after the flight of the Earls of Tyrone and O'Donnell. Pop. 144,404.

Londonderry, ROBERT STEWART, SECOND MARQUIS OF, a British statesman, born in County Down in 1769. In 1796 he became Lord Castlereagh, and, being a member of the Irish Parliament, next year he was made keeper of the privy-seal for that kingdom, and the year after chief secretary to the lord-lieutenant. After the Union he sat in Parliament as member for Down, and in 1802 was made president of the Board of Control. In 1805 he was appointed secretary of war and the colonies; but on the death of Pitt he retired until the dissolution of the brief administration of 1806 restored him to the same situation in 1807; and he held his office until the failure of the expedition to Walcheren, advocated by him, and his duel with his colleague, Canning, produced his resignation. In 1812 he became foreign secretary, and he was a member of the Congress of Vienna in 1814. He became very unpopular through his conduct on this occasion and his support of the Holy Alliance; and the responsibilities which he had to assume as virtual prime minister in connection with repressive measures for the protection of order, and the fatigues of an arduous session, seem to have unhinged his mind, leading him to commit suicide in 1822. He had succeeded his father the year before as Marquis of Londonderry.

London Pride (*Saxifraga umbrosa*), a perennial evergreen plant of the saxifrage order common in Britain. It has flower-stems 6 to 12 inches high, with small spotted pink flowers.

London Purple, an arsenical powder used as an insecticide in plant life.

Long, CHARLES CHAILLÉ, soldier, born at Princess Anne, Maryland, in 1842. He served in the Civil war, attaining the rank of captain. In 1869 he was made a lieutenant-colonel in the Egyptian army; chief of staff to General Gordon in 1874; returned to the United States in 1877 and was admitted to the bar; was appointed consul-general in Corea in 1887; special commissioner to the Paris Exposition in 1900. He is the author of various works of travel, in Africa and other works.

Long, CRAWFORD W. (1815-78), an American physician, born at Danielsonville, Georgia, educated at Franklin College (now the University of Georgia), and after practicing for a time in Jefferson, Ga., he removed to Athens, Ga. He was probably the first to use ether anæsthesia in surgery, in March, 1842; but he failed to publicly announce the results at the time, and Dr. W. T. G. Morton (q. v.), in Boston, meanwhile publicly demonstrated the efficacy of vaporized ether as an anæsthetic.

Long, GEORGE, an English scholar, born in 1800; died in 1879. He was educated at Cambridge, became professor of ancient languages in the University of Virginia in 1824; professor of Greek in the University of London in 1828, but resigned in 1831; professor of Latin at University College in 1842-46; classical lecturer at Brighton College 1849-71. He was one of the founders of the Royal Geographical Society, and did much work in connection with the Society for the Diffusion of Useful Knowledge, including the editing of the *Penny Cyclopædia*. He contributed largely to *Smith's Dictionaries of Greek and Roman Antiquities, Biography and Geography*. Among his works are a translation of *Select Lives from Plutarch* (1844), a *Classical Atlas* (1854), *The Decline of the Roman Republic* (1864-74). He was also general editor of the *Bibliothecæ Classica*, to which he contributed a valuable edition of *Cicero's Orations*.

Long, WILLIAM JOSEPH, clergyman, born at North Attleboro, Mas-

sachusetts, in 1867. He was ordained to the Congregational ministry in 1899, and is a lecturer and writer on nature and animal life. His books include *Ways of Wood Folk*, *Secrets of the Woods*, *A Little Brother to the Bear*, etc. His descriptions of animal life have been severely criticised by John Burroughs and others.

Long, LOCH, a narrow, picturesque arm of the sea, in Scotland, stretching with a slight curve north and northeast from the Firth of Clyde for about 16 miles between the counties of Argyle and Dumbarton.

Longan (lon'gan), an evergreen Eastern tree (*Nephelium Longanum*), a native of the south of China, yielding a delicious fruit. It is of the same genus with the litchi, but its fruit is brown and smaller, being about 1¼ inches in diameter. It is grown to some extent in European hothouses.

Long Beach, a city and resort of Los Angeles county, California, on the Pacific coast, 20 miles s. of Los Angeles; with a growing industrial district. Pop. 40,000.

Long-boat, a large ship's boat, carvel built, from 32 to 40 feet long, formerly the largest carried by a ship.

Long-bow. See *Bow*.

Long Branch, a fashionable watering place on the coast of New Jersey, 32 miles south of New York. It has wide avenues with numerous hotels, boarding houses and cottages. The permanent population is 13,298, but during summer is sometimes increased by 60,000 or more.

Longevity (lon-jev'i-ti), a term which is used both for average or probable duration of life in a community, or for great length of life reached by particular individuals. Statistics gathered by life insurance companies indicate that a person at the age of 10 years has an average expectation of living 48.36 years longer; at 20 years 41.49 years longer; at 30 years 34.43 years longer; at 40 years 27.28 years longer; at 50 years 20.18 years longer; at 60 years 13.77 years longer; at 70 years 8.54 years longer; at 80 years 4.78 years longer; at 90 years 2.11 years longer. When the sexes are considered separately the average duration of life is somewhat higher in women than in men. The question of the extreme limit to which human life may possibly attain is also of great interest. Ordinary observation leads to the conclusion that a comparatively small number of men reach the age of 70, a very much diminished number attain to 80, while 90 is rare. There are, however, well-authenticated cases of persons who have reached 100 years, and even a few years more; but such cases as that of Thomas Parr, said to have been 152 years old, and Henry Jenkins, said to have been 169, rest on mere unreliable assertion.

Longfellow (long'fel-lō), HENRY WADSWORTH, an American poet, was born at Portland, Maine, in 1807; died in 1882. He entered Bowdoin College at fourteen years of age (1821) and was graduated in 1825. While at college he distinguished himself in the study of modern languages, and published some short poems, among which was the *Hymn to the Moravian Nuns*. In 1826 he accepted the professorship of modern languages at Bowdoin, being allowed three years to prepare himself for the post by study and travel in Europe. In 1833 he published a volume of translations from Coplas de Manrique, with an essay on the *Moral and Devotional Poetry of Spain;* in 1835 appeared *Outre Mer*, a volume of prose sketches, and in the same year he was elected to the chair of modern languages and literature in Harvard University. After spending another year in Europe, studying Scandinavian languages and literature, he entered on his professorship in 1836. In 1839 he published *Hyperion, a Romance*, and *Voices of the Night*, a series of poems. *Ballads and other Poems* and a small volume of *Poems on Slavery* appeared in 1842; the *Spanish Student*, a drama in three acts, in 1843; the *Belfry of Bruges* in 1846; *Evangeline* in 1847. In 1845 he published a volume—*The Poets and Poetry of Europe*, containing translations by himself and others, with much valuable information respecting the writers. Among the best-known of his later works are *The Golden Legend*, *Hiawatha*, *Courtship of Miles Standish* and *Tales of a Wayside Inn*. He resigned his chair at Harvard in 1854, and subsequently received the degree of LL.D. and D.C.L. from the universities of Cambridge and Oxford. His poems are equally popular on both sides of the Atlantic.

Longford (long'ford), an inland county of Ireland, in the province of Leinster, bounded on the west by the Shannon and Lough Ree; area, 421 square miles. The surface is mostly flat, and bogs are numerous and extensive, especially around Lough Ree and in the west, but a great portion of the south consists of rich soil suitable for growing all kinds of grain and green crops. Grazing and dairy farming are the principal pursuits. By means of the Royal Canal and the Shannon the county has water

communication with Dublin and Limerick. Chief towns, Longford, Granard and Ardagh. Pop. 46,672.—The county town, Longford, stands on the left bank of the Camlin, 70 miles northwest of Dublin. It contains a county courthouse, prison, barracks, corn mills, tan yards, etc. Pop. 8747.

Longicorn Beetles (lon'ji-korn), a family of Coleoptera, including a vast number of

Longicorn Beetle (*Cerambyx heros*).

large and beautiful beetles, all remarkable for the length of their antennæ, which, in the males of some of the species, are several times longer than their bodies. The females deposit their eggs beneath the bark of trees by means of a long, tubular, horny ovipositor and the larvæ are very destructive to wood.

Longinus (lon-ji'nus), Dionysius, or Cassius, a Greek writer, born about A.D. 213, according to some at Athens, according to others at Emesa or Palmyra. He taught criticism, rhetoric and grammar at Athens, visited the East, and became counselor to Zenobia, queen of Palmyra, whom he encouraged to throw off the Roman yoke, for which, after the reconquest of Palmyra, he was put to death by the Emperor Aurelian A.D. 273. Of the many writings of Longinus the treatise *On the Sublime* is the only one extant.

Longirostres (lon'ji-ros-trēz; L. *longus*, long, and *rostrum*, a beak), a group of wading birds (Grallatores), characterized by the possession of long, slender, soft bills, mostly frequenting marshy districts, moors, fens, etc. This group comprises the snipes, woodcock, sandpipers, curlews, ruff, godwit, turnstone, avoset, etc.

Long Island, an island belonging to the State of New York, extending 118 miles in length, and varying from 12 to 23 miles in breadth; area, 1682 square miles. A considerable section of the eastern portion of it, including the large city of Brooklyn, is now included in New York city, while it is connected with Manhattan Island by several large suspension bridges across East River and by tunnels under this river. Long Island Sound separates it from Connecticut. The most fertile portions of the island are carefully cultivated and much produce raised for the New York market. There are many seaside resorts along the coast, including the popular Coney Island.

Long Island, a name sometimes given to the whole of the Outer Hebrides.

Long Island City, in the Borough of Queens, Greater New York, on Long Island, and separated from Brooklyn by Newtown Creek. It has become an automobile manufacturing center, and has also a large gas plant, large biscuit factory, etc.

Long Island Sound, an arm of the sea between Long Island and the State of Connecticut, about 115 miles long and generally about 20 miles wide. It is connected with New York Bay by the strait called East River. See *East River*, *Hell Gate*.

Longitude (lon'ji-tūd) in geography, the distance of a place due east or west from a meridian taken as a starting point, this distance being measured along the equator or a parallel of latitude; in other words, it is the angle

between the meridian plane of one place and some fixed meridian plane. Longitudes are generally reckoned from the meridian of Greenwich; the meridians of Paris, Ferro and Washington have been also employed. That of Paris was abandoned in 1911 in favor of the Greenwich meridian. (See *Meridian*.) Since the

parallels of latitude get smaller towards the poles, at which all the meridians converge, it is evident that degrees of longitude which are 69½ statute miles long at the equator, get shorter towards the poles, at which they finally cease to exist. As the earth makes one revolution on its axis, that is, turns through 360° of longitude from west to east, in twenty-four hours, if the sun or a star is on the meridian of any place at a particular time it will be on the meridian of another place 15° west of the first in one hour. Thus 15° of longitude represent one hour of difference in time, and hence longitude may be easily determined by the use of the chronometer set to Greenwich time, which is the method commonly employed at sea. Longitude is reckoned to 180° eastward or westward of the fixed meridian. The latitude and longitude of a place are what enable us to fix its exact position on a map or globe. Celestial longitude is quite analogous to terrestrial.

Longstreet (long'strēt), General James, an American soldier, born in South Carolina in 1821. He was graduated at the Military Academy in 1842; saw much service on the Mexican frontier, and took a prominent part on the Confederate side during the Civil war, chiefly in connection with General Lee's army. Promoted lieutenant-general, he commanded a corps at the battle of Gettysburg. He was severely wounded in the battle of the Wilderness. After the war he occupied several important positions, including those of Minister to Turkey and U. S. Marshal for Georgia. In 1897 he was made a commissioner of railroads, and died in 1904.

Longton (long'tun), a municipal borough of England, in Staffordshire, 5 miles s. e. of Stoke-upon-Trent. It is a seat of china and earthenware manufacture, and has breweries, malt kilns, brick-works, and in the vicinity collieries and iron mines. Pop. 37,481.

Longus (lon'gus), a Greek novelist, probably of the third century after Christ. He is the author of the pastoral romance of *Daphnis and Chloe.*

Longview, a city, capital of Gregg county, Texas, 24 miles w. of Marshall. It has saw and planing mills, plow and bottling works, cotton-seed oil mills, etc. Pop. 5155.

Longworth (long'wurth), Nicholas, horticulturist, was born in Newark, New Jersey, in 1782. In 1803 he removed to Cincinnati. He devoted himself to the cultivation of the grape and strawberry. Kindly but eccentric, he gave much money to those called by him the '*devil's poor.*' His property was estimated at from ten to fifteen million dollars. He died in 1863.

Lonice'ra. See *Honeysuckle.*

Lons-le-Saunier (lo n-lē-sō-nyā), a town of France, capital of the department of the Jura, 45 miles s. w. of Besançon. It has manufactures of spectacles, textiles, etc. Pop. (1906) 10,648.

Loo-Choo, Lew-Chew, Liu-Kiu (Japanese, Riu-Kiu), a chain of islands in the Pacific, between Japan and Formosa, and between lat. 24° 10′ and 28° 40′ N.; but the name is sometimes extended also to the group further north, properly known as the Linschoten Islands. The largest island is Okinaw, or Great Loo-Choo (area about 500 sq. miles). Oshima, the island next in size, has an area of 300 sq. miles. The climate is healthy, temperate and favorable for agriculture. The chief products are rice, wheat, maize and batatas; the sugar-cane, cotton, sago, tobacco, indigo, the fig and the banana are also grown. The inhabitants are mainly of race akin to the Japanese, but their manners and civilization are chiefly those of the Chinese. Since 1874 the archipelago has belonged to the Japanese empire. Confucianism is the prevailing religion, but Buddhism has a considerable number of adherents. Pop. 453,550.

Loomis (lō'mis), Charles Battell, author, born at Brooklyn, New York, in 1861. He became a prolific writer for periodicals, and is the author of numerous sketches, many of them humorous. Of them may be mentioned *The Four-masted Catboat, I've Been Thinking, Poe's 'Raven' in an Elevator, A Holiday Touch, Little Maude,* etc. He died in 1911.

Loomis, Elias, physicist, was born in Willington, Connecticut, in 1811. In 1838 he became Prof. of Mathematics and Natural Philosophy in Western Reserve College; in 1844 Prof. of Natural Philosophy in the University of the City of New York; in 1860 Prof. of Natural Philosophy and Astronomy in Yale College. His text-books on the subjects of mathematics, astronomy and the natural sciences have had an immense circulation. He died in 1889.

Lopez (lō'pez), Cape, a low promontory on the west coast of Africa, in the delta of the River Ogoway, territory of the French colony of Gabun. In 1883 M. de Brazza made it a station and entrepôt.

Lopez, Francisco Solano, President of Paraguay, born at Asuncion

in 1827, son of Don Carlos Antonio Lopez, then president. His early education was neglected during the dictatorship of Francia. In his eighteenth year his father made him a brigadier-general in the war against Rosas, the dictator of Buenos Ayres, but he took no actual part in the struggle. He afterwards filled some of the principal offices of state, and was sent to Europe in 1853, accredited to the chief courts there. In 1855 he returned to Paraguay, became minister of war, and on the death of his father, in 1862, President for ten years. He had long been aiming at the foundation of a great inland empire, and as his military preparations were now complete, and his army superior to that of any of the South American States, he took opportunity in 1864 to commence hostilities against Brazil. The Argentine Republic and Uruguay allied themselves with Brazil, and after five years' conflict Lopez was reduced to extremities, and was finally surprised on the banks of the Aquidaban by a troop of Brazilian cavalry and slain, March 1, 1870. The latter part of his career had been stained by many cruelties and wanton murders.

Lophius. See *Angler-Fish.*

Lophobranchii (lof-o-brank'i-i), the suborder of Teleostean fishes, including the peculiar 'sea-horses' and the 'pipe-fishes.' See *Pipe-fishes* and *Hippocampus.*

Loquat (lō'kwat; *Eriobotrya Japonica*), a Japanese fruit-tree of the nat. order Rosaceæ, and closely allied to the medlars. The fruit is about the size of a large gooseberry, of a fine yellow color. The tree is a beautiful evergreen, whose white flowers have a fragrance like that of hawthorn blossom. It attains a height of from 20 to 30 feet, but when cultivated it is not allowed to exceed 12 feet. It thrives well in Australia.

Lorain (lo-rān'), a city of Lorain county, Ohio, on Lake Erie, 25 miles w. of Cleveland. It has a good harbor; ships grain, coal, iron ore and lumber, and has enormous steel works, extensive ship-works, stove and shovel works, railroad shops, etc. Pop. 28,883.

Loranthaceæ (lor-an-thā'se-ē), a nat. order of exogenous plants, of which the mistletoe is the type, the perianth being often brilliantly colored, all in one piece, or formed of many sepals.

Lorca (lor'kā), a town of Eastern Spain, in the province and 42 miles southwest of Murcia, consists of an old Moorish town on a slope crowned by a castle, and a lower modern town. There are manufactures of coarse woolens, linens, leather, soap and earthenware, and an important annual fair which lasts fourteen days. In the vicinity are lead mines. Pop. 69,836.

Lorcha (lor'chā), a light Chinese sailing vessel, carrying guns, and built after the European model, but rigged like a Chinese junk.

Lord (Anglo-Saxon *hlāford*, for *hlāf-weard*, that is bread-keeper), a title of honor or dignity, used in different senses. In the feudal times a lord was the grantor or proprietor of land, who retained the dominium or ultimate property of the land or fee, the use only being granted to the tenant. A person who has the fee of a manor, and consequently the homage of his tenants, is called the *lord of the manor.* Loosely all who are noble by birth or creation, as the peers of Britain, may be called *lords.* The *lords temporal*, in contradistinction to the *lords spiritual*, are the peers who sit together in the House of Lords, as opposed to the bishops who have seats in the house. Lord is sometimes only an official title, as *lord advocate, lord mayor*, etc. It is also applied, but only by courtesy, to the sons of dukes and marquises, and to the eldest sons of earls (see *Address, Forms of.*) In Scotland judges of the Court of Session prefix the title 'lord' to their surname, or to some territorial designation assumed by themselves. Judges, when on the bench, are addressed as 'My lord' throughout the three kingdoms.

Lord Mayor, the title given to the chief magistrates of London, Dublin and York, during the year for which they hold office.

Lord-Mayor's-Day, the 9th of November, on which a great procession accompanying the newly-elected Lord Mayor of London, from Westminster to Guildhall, takes place. The procession, formerly famous for its historical and allegorical devices, has now much dwindled.

Lords, House of. See *Parliament;* also *Britain.*

Lord's Prayer, a formula of prayer enunciated by Christ on two different occasions, for which see Matt. vi, 5-13, Luke xi, 1-4. Among the earliest Christians it was accepted as the standard form of prayer, and its use in the liturgy is frequently mentioned by the early fathers. The concluding clause of the prayer, known as the doxology, 'For Thine is the kingdom,' etc., is not found in St. Luke's gospel, and even in that of St. Matthew it is only found in some of the later manuscripts, in which it is generally held to be an interpolation.

It is generally retained by Protestants, but is discarded by Roman Catholics.

Lord's Supper, one of the sacraments of the Christian religion: so named because it was instituted by our Saviour when he took his last meal with his disciples, on the occasion of celebrating the Passover. It has also the names of eucharist and communion, and among the Catholics that of the mass or sacrifice of the mass. It has undoubtedly been celebrated, with certain differences, since its institution, and still is celebrated by all sects of Christians except the Quakers, however much their views may differ as to its nature and virtue. The chief controversies regarding the nature of the rite have been chiefly on the question of the 'real presence' of Christ's body and blood and the doctrine of transubstantiation. The doctrine of transubstantiation, first started by Paschasius Radbertus in the ninth century, was soon generally received, and at last was officially approved by the Council of Rome in 1079, and solemnly confirmed in 1215 by the fourth Lateran Council. According to this doctrine the whole substance of the bread and wine is changed into the body and blood of Christ, only the appearance of bread and wine remaining; and the Roman Catholic Church further maintains that Christ is given wholly and entirely both under the form of the bread and under that of the wine. From the doctrine of transubstantiation sprang the adoration of the host (or sacred bread), as well as the custom of refusing the cup in the communion to the laity and non-officiating priests, a practice first authoritatively sanctioned at the Council of Constance, 1415. At the Reformation both the German and Swiss reformers agreed in rejecting the doctrine of transubstantiation and the mass, and maintaining that the Lord's supper ought to be celebrated before the whole congregation, and with the administration of both bread and wine. In explaining the words by which the supper was instituted Luther and Zwingli differed, and their different opinions on this subject formed the principal subject of dissension between the Lutheran and Calvinistic churches. Luther took the words, 'This is my body,' etc., in their literal sense, and thought that the body and blood of Jesus Christ are united, in a mysterious way, with the bread and wine, which, however, remain unchanged, so that the communicant receives, in, with, and under the bread and wine, the real body and blood of the Redeemer. Zwingli, on the other side, understood the words in a figurative sense, and maintained that the Lord's supper was a mere commemoration of the death of Christ, and a profession of belonging to his church. This view is in substance adopted by the Socinians, Arminians and some others. The opinion advanced by Calvin, by which a spiritual presence of the body and blood of Christ is supposed in the communion, by partaking of which the faithful receiver is brought into union with Christ, through the medium of the Holy Ghost, though it came nearer to the Lutheran doctrine than that of Zuinglius did, yet was essentially different. The Greek Church has not adopted the doctrine of transubstantiation in its whole extent; yet her doctrine, which was defined and sanctioned by the Synod of Jerusalem in 1672, comes nearer to this dogma than to that of the Reformed Church. The Anglican Confessions incline more to the view of Zwingli. The 28th Article of the Church of England declares that 'the body of Christ is given, taken, and eaten in the supper only after an heavenly and spiritual manner.' The doctrine adopted by the Presbyterian Church of Scotland in the main agrees with that propounded by Calvin.

Lorelei (lō're-lī), a precipitous cliff on the Rhine, about 450 feet high, half a mile above St. Goar. Legend gives it as the abode of a siren, who by her singing enticed boatmen thither to their destruction.

Lorenzo Marques. See *Delagoa Bay.*

Loretto, or LORE'TO (lo-rā'to), a city of Italy, in the province of Ancona, about 3 miles from the sea. Pop. 7845. The city is a famous resort of pilgrims, who come to visit the *Casa Santa* or Holy House of Loretto, which is said to have been the house of the Holy Family at Nazareth, and to have been miraculously conveyed by the angels first to Fiume in Dalmatia, and afterwards to Loretto. This Holy House, which is in the center of a church built by Majano and Bramante (1464-1587), is covered externally with white marble, is 30 feet long, 15 wide and 18 feet high, and richly ornamented. The number of pilgrims amounts to 50,000 yearly.

Lorient, or L'ORIENT (lo-ri-äṅ), a fortified seaport of France, in the department of Morbihan, at the mouth of the Scorf. It is well built, and has a capacious harbor and extensive docks. Pop. (1906) 40,848.

Lorikeet (lor'i-kēt), the general name of certain small Australian birds belonging to the parrot tribe and forming the genus *Trichoglossus*, remarkable for their extensible tongue, fur-

nished with a pencil at its extremity, by which they are enabled to suck up the nectar of flowers.

Loris (lō'ris), a genus of quadrumanous mammals allied to the lemurs.

Loris-Melikoff (lō'ris-mel'i-kof), MICHAEL TARIELOVITCH TAINOFF, COUNT, a Russian general, born in 1826 at Tiflis; died in 1888. He entered the army in 1843; distinguished himself in the Caucasus in 1847, and at the siege of Kars in 1854; was made lieutenant-general in 1863; commander of the army in Armenia in 1876, and took Kars. In 1878 he was made a count; in 1879 governor-general of Charkow, in which post he suppressed the Nihilistic conspiracies with much vigor. In 1880 he was appointed minister of the interior, in which post he showed a tendency towards measures of a wide remedial kind, and had persuaded the czar, Alexander II, to call a kind of national representative assembly, when the assassination of the latter occurred, March, 1881. On the accession of Alexander III, Loris-Melikoff's position became untenable, and he resigned in 1881.

Lorne (lorn), JOHN GEORGE DOUGLAS SUTHERLAND CAMPBELL, MARQUIS OF, and Duke of Argyll since 1900, was born in 1845, and educated at Eton, St. Andrews University and Cambridge. He represented Argyllshire in the Liberal interest (1868-78), married the Princess Louise, a daughter of Queen Victoria, in 1871, and was governor-general of Canada from 1878 to 1883. He has written several books, tales, etc., among which we may mention *The Book of Psalms*, literally rendered in verse; *A Trip to the Tropics; Guido and Lita, a Tale of the Riviera* (in verse); *Memoirs of Canada and Scotland*.

Lorraine (lō'rān'; German, *Lothringen;* anc. *Lotharingia*). a territory of France, in the department of Moselle, was originally so named as being the kingdom of Lothaire II. It was afterwards divided into two parts, Upper and Lower Lorraine. The latter, between the Rhine, Meuse and Scheldt, became the duchy of Brabant, and ultimately a part of Belgium. Upper Lorraine, between the Rhine, Saône and Meuse, was for long an independent duchy, but was ceded to France in 1736. The inhabitants, though of German origin, speak the French language, except those of the district between Metz and the Vosges, which was on that account called *German Lorraine*. At the end of the war between France and Germany, in 1870-71, a considerable portion of Lorraine, including the fortresses of Metz and Thionville, was annexed to Germany (see *Alsace-Lorraine*). By the treaty of 1919 (see *Treaty*) it was restored to France.

Lorraine, CLAUDE. See *Claude Lorraine*.

Lory (lō'ri), a group of scansorial birds, of the family Psittacidæ or parrots, having broad tails, and dense

Purple-capped Lory (*Lorius domicellus*).

soft plumage, the colors of which are brilliant. They are found in the Eastern Archipelago, also in New Guinea, Borneo and the South Sea Islands. The collared lory is easily taught to speak.

Lossing (los'ing), BENSON JOHN, author, was born in Beekman, New York, in 1813. He was a voluminous writer and annotator, the most important of his works being, *The Pictorial Field-Book of the Revolution, Pictorial History of the Civil War, The Empire State* and *Life of Washington*. He died in 1891.

Los Angeles (lōs an'ge-les), a city, the capital of Los Angeles county, California, about 10 miles from the Pacific coast. Although San Pedro and Wilmington, on the coast, have been annexed to the city and are known as Los Angeles Harbor. Is the commercial metropolis and the railway center of Southern California, and has had a phenomenal growth since 1900, when its population was 102,479. The situation of the city between the foothills of the San Gabriel mountains and the sea is attractive, and the mild climate has made it a favorite health resort. The business district is level; the suburbs are laid out on hills. An aqueduct is being constructed to carry water from the Owens valley, over 200 miles away. The economic interests of Los Angeles center in the culture of fruits, though manufactures are increasing. There are beautiful parks, Griffith Park covering 3000 acres. Pop. 500,000.

Lost Property, strays and waifs excepted, may be re-

tained by the finder with impunity, after proper means have been taken to advertise it; and if it cannot be conveniently preserved without hazard he may dispose of it if not claimed. If, however, the loser can identify his property he has a right to restitution, and a third party purchasing lost property from the finder must restore it to the owner if called upon. There are certain cases in which a jury will construe the retention of lost property into larceny. The finder is not obliged to incur expense in advertising for the owner. In Britain in cases of treasure-trove, *i. e.*, the finding of valuables deposited in the earth, the finder must, under a penalty, give notice to the crown, in which the ownership of all treasure-trove is vested.

Lot (lō), a department in the south of France; area, 2017 sq. miles. The arable land, amounting to a half of the whole, has deep alluvial soils, adapted to wheat, maize, hemp and tobacco; and lighter soils, more suitable for barley, rye and root crops. Vines, the mulberry for silkworms, and plums are extensively grown. Sheep-rearing is an important industry. Corn and other agricultural products are largely exported. The capital is Cahors. Pop. (1906) 216,611.—The river LOT, which gives name to the department, is one of the largest tributaries of the Garonne. Total course, about 250 miles, of which 180 miles are navigable.

Lot-et-Garonne (lō-e-gà-ron), a department in the southwest of France; area, 2079 sq. miles. It is intersected by the Garonne and its tributary the Lot, hence the name. More than a half of the department is arable, producing crops of wheat, maize, rye, etc. Other important crops are tobacco and hemp. Prunes and chestnuts are largely exported, and the cork-oak is abundant. There is an active trade in wine, brandy, meal, hemp, resin. Capital, Agen. Pop. (1906) 274,610.

Lothaire (lo-thair'), a name of old German origin, borne by kings of the Franks and early German emperors. See *Louis I.*

Lothian, EAST. See *Haddington.*

Lothian, MID. See *Edinburgh.*

Lothian, WEST. See *Linlithgow.*

Loti (lō-tē), PIERRE, pen name of Louis Marie Viaud, born at Rochefort, France, in 1850. He entered the navy, but his descriptions of the conduct of the French soldiers at Hué in 1883 led to his dismissal. He became an active writer, producing vivid and charming pictures of nature, which brought him membership in the French Academy in 1891. Among his books are *Le Mariage de Loti*, *Madame Chrysanthème* and *Le Désert.*

Lotions (lō'shuns), liquid remedies, consisting principally of distilled soft water, holding in solution various medical substances, and applied externally. Lotions are cooling, stimulatin, astringent, soothing, or sedative.

Lotophagi (lo-tof'a-jī), or lotus-eaters, in ancient Greek legends, the name of a people on the north coast of Africa who lived on the fruit of the lotus tree. According to Homer they received Ulysses and his followers hospitably, and the sweetness of the fruit induced such happy languor that the Greeks forgot their native land.

Lötschberg Tunnel (leutch' berk), a transalpine railway tunnel, over nine miles long, extending from Kandersteg in the Bernese Oberland to Goppenstein, 17 miles from Brigue. The work of cutting was begun in 1906 and completed in 1911. Difficulties arose because of water and subterranean heat, but the tunnel was remarkable by the accuracy of its calculation, in spite of the fact that it was cut in two curves.

Lottery (lot'ēr-i), a scheme for the distribution of prizes by chance, the plan being generally to have a certain number of prizes and a greater number of tickets. Lotteries on large scale originated in Italy, from whence they passed into France. In 1709 the rage for private, and, in many instances, most fraudulent lotteries, was at its height in England, and towards the close of the year an existing act of Parliament was put in force for the suppression of such lotteries as public nuisances. Government lotteries still continued, however, and large sums of money were raised by them; but in 1826 lotteries were entirely abolished in Britain, except in the case of art unions, which are permitted from their supposed good effects in encouraging art. In France the demoralising influence of lotteries caused their suppression in 1836, with the effect of largely increasing in the following year the deposits in the savings-banks. Lotteries were early instituted in the American colonies and became very popular in the eighteenth century, being commonly resorted to for the purpose of assisting colleges or other public institutions. Efforts to abolish them were made early in the nineteenth century, and they were prohibited in a number of the States before the middle

of the century. The last stronghold of the lottery in this country was in Louisiana, and the charter for this expired in 1893. In 1890 Congress passed a law forbidding the use of the mails for lottery purposes. Lotteries still exist in some parts of Europe, generally in aid of State finances.

Lotus (lō'tus), a name applied to a number of plants different from the lotus famous in Greek legend. One of these is the *Zizyphus Lotus*, a native of Northern Africa and Southern Europe, belonging to the nat. order Rhamnaceæ. It is a shrub 2 or 3 feet high, bearing a fruit, the jujube, which is a drupe of the size of a wild plum. Some think this was the food of the Lotophagi (see *Lotophagi*), though others consider Homer's lotus to have been the date, or the berry of the *Rhamnus Lotus*, a North African shrub, while others again refer it to the agreeable berry of the *Nitraria tridentata*, still greatly prized by the Berbers. The name lotus was also given to several species of water-lily, as the blue water-lily (*Nymphæ cærulĕa*), the Egyptian water-lily (*N. Lotus*), and to the nelumbo (*Nelumbium speciōsum*), which grow in stagnant or slowly running waters. *Nymphæa cærulĕa* and *N. Lotus* are often found figured on Egyptian buildings, columns, etc., and the nelumbo, or Hindu and Chinese lotus, bears a prominent part in the mythology of these countries. The name is also given to a genus of plants, nat. order Leguminosæ, consisting of creeping herbs and undershrubs, chiefly natives of temperate regions throughout the world.

Lotze (lot'se), RUDOLPH HERMANN, a German philosopher and physiologist, born at Bautzen in 1817; studied philosophy and medicine at Leipzig; was appointed professor of philosophy at Göttingen in 1844, and was called in 1881 to Berlin, where he died the same year. As a philosopher the standpoint of his system may be described as a teleological idealism, according to which the sufficient ground for all being, and for all that takes place in the universe, is found in the idea of the Good. Among his works are *Metaphysik* (1841), *Universal Pathology* (1842), *Logik* (1843), *On the Idea of Beauty* (1846), *Medical Psychology* (1852), *Microcosmus, Ideas for a History of Nature and Humanity* (1856), and *System of Philosophy* (1874-84).

Loubet (lō-bā), EMILE, a French statesman, born at Marsanne in 1839. He became a lawyer and in 1876 was made a member of the French Chamber. He was elected to the Senate in 1885, became premier of France in 1892, was later president of the Senate, and in 1899, on the death of President Faure, was elected President of the French Republic. He held this position until 1906.

Loudon (lō'don), JOHN CLAUDIUS, a Scottish horticulturist, born in 1783; died in 1843. He practised landscape gardening in England, and was the author of numerous works, the principal of which are the encyclopædias of *Gardening* (1822), *Of Agriculture* (1824), and *Of Plants* (1829). He edited the *Gardener's Magazine* from 1826 to 1843 and *Loudon's Magazine of Natural History* from 1828 to 1838. The work which he intended to be his greatest, the *Arboretum et Fruticetum Britannicum*, and which was published in 1838 at his own expense, involved him in a debt of £10,000.—His wife, JANE WEBB LOUDON, was also the author of several popular botanical works, such as *British Wild Flowers* (1846), and *Botany for Ladies* (1849). She died in 1858.

Loughborough (luf'bur-o), a town of England, in the county and 10½ miles N. N. W. of Leicester. It is neatly built, and has a thriving appearance. The principal manufacture consists of hosiery. There are also a famous bell foundry, dyeworks, brickworks, etc. Pop. (1911) 22,992.

Louis I (lō'is; Fr. pron. lō-ē') or as a German name LUDWIG, surnamed *Le Débonnaire*, or *the Pious*, the son of Charlemagne, born in 778, succeeded his father in 814 as King of the Franks and Emperor of the West. In 817 he divided his dominions among his three sons, Lothaire, Pepin and Louis. His nephew Bernard, king of Italy, revolted at this division, but was allured by Louis to Châlons, where he was put to death. In 829, in consequence of the urgent solicitations of his second wife, Judith of Bavaria, who had borne him a son, he made a new division of the empire. The result was that the elder brothers revolted and commenced a war, which, with various fortune to the parties chiefly concerned, lasted till the death of the emperor in 840. He was succeeded as emperor by his son Lothaire I; by the treaty of Verdun in 843 his son Charles the Bald obtained the territories from which France as a separate nationality developed; while another son, Louis the German, obtained territories from which the distinctive German nationality developed. See *France*, *Germany*.

Louis VII, of France (counting from the above Louis I), born in 1120, succeeded his father Louis VI in 1137. He joined the second crusade to Palestine in 1147, but returned two years

afterwards, having suffered many disasters, and lost most of his men. His divorced wife Eleanor married Henry II of England, who thus acquired Guienne and Poitou. He died in 1180, and was succeeded by his son Philip Augustus.

Louis IX (St. Louis), King of France, eldest son of Louis VIII, born in 1215, succeeded to the throne in 1226, but remained some time under the regency of his mother. In the year 1244, when sick of a dangerous disorder, he made a vow to undertake a crusade to Palestine; and in August, 1248, sailed with his wife, his brothers, and 80,000 men to Cyprus, and in the following year proceeded to Egypt. Landing at Damietta, in 1249, he took this city, and afterwards twice defeated the Sultan of Egypt, to whom Palestine was subject. But famine and contagious disorders soon compelled him to retreat; his army was almost entirely destroyed by the Saracens, and himself and his followers were carried into captivity. Not until the year 1254 did Louis return to France, where he employed himself in improving the condition of the people by wise laws. In 1270 he determined to undertake another crusade. He sailed to Africa, besieged Tunis, and took its citadel. But a contagious disorder broke out, to which he himself (1270), together with a great part of his army, fell a sacrifice. In 1297 he was canonized by Boniface VIII.

Louis XI, King of France, eldest son of Charles VII, was born in 1423, and on his father's death in 1461 he assumed the crown. His unscrupulous ambition soon gave rise to a league against him, headed by the dukes of Burgundy, Lorraine and others, but his craft and the promises of concessions which he made, brought about the dissolution of the league. After the death of Charles the Bold of Burgundy before Nancy in 1477, Louis took possession by force of a considerable part of his dominions as vacant fiefs of France, on account of which a war arose between him and Maximilian of Austria, who had married Mary, the daughter of the deceased duke. It was eventually agreed that the dauphin should marry Margaret, daughter of Maximilian, and receive the counties of Artois and Burgundy. In 1481 Louis, who had been twice affected by apoplexy, haunted by the fear of death, shut himself up in his castle of *Plessis-les-Tours*, and gave himself over to superstitious and ascetic practices. He died in 1483. The great object of Louis was the consolidation of France, the establishment of the royal power, and the overthrow of that of the great vassals, and in achieving this end he was very successful, although by most unscrupulous means. He encouraged manufactures and trade, and did much for the good of his kingdom, but was cold-hearted, cruel and suspicious. Louis XI was the first French monarch, who assumed the title of *Most Christian King*, given him by the pope 1469.

Louis XII, King of France from 1498 to 1515, called by his subjects *le Père du Peuple*, was born in 1462. He was the son of Charles, duke of Orleans, grandson of Charles V. He divorced his first wife Jeanne, daughter of Louis XI, and married the widow of Charles VIII, thus uniting the Duchy of Brittany with the crown. In Italy he conquered the Duchy of Milan, took possession of Genoa, and fought with Ferdinand the Catholic for the Kingdom of Naples. Louis took part in the League of Cambray against the Venetians, whom he defeated at Agnadello in 1509. In 1510, however, he had to face the Holy League formed against him by Julius II, Venice, Spain, England and the Swiss; was beaten at Novara by the Swiss in 1513, and by the English at Guinegate, and had to retreat out of Italy. At the age of fifty-three he married a second wife, Mary, the sister of Henry VIII of England, and died about three months afterwards (1515) without male issue. He was succeeded by Francis I.

Louis XIII, King of France, surnamed the *Just*, the son of Henry IV, born in 1601. He ascended the throne (1610) after the murder of his father, his mother (Maria de' Medici) being made guardian of her son and regent of the kingdom. In 1614 Louis was declared of age, and married the year following Anne, daughter of Philip III of Spain. His mother was now exiled from court, and excited a civil war, during which the Huguenots also rose in arms against the king. Louis gave himself up to the guidance of Cardinal Richelieu. A peace was concluded in 1623, but it was not of long continuance. Eventually Rochelle, the headquarters of the Huguenots, was captured (1628), and the revolt, headed by the queen-mother, was broken by the defeat of the insurgents at Castelnaudary (1632). Louis was now induced by Richelieu to take part in the Thirty Years' war, and obtained frequent successes over the Austrians and Spaniards, adding Roussillon, Alsace and the Duchy of Bar to France. He died in 1643.

Louis XIV, King of France, known as *Louis the Great*, son of Louis XIII and Anne of Austria, was born at St. Germain-en

Laye in 1638, and succeeded his father in 1643. His minority was occupied by the continuation of the wars against Austria; by the victories of Condé—victories crowned by the Treaty of Westphalia; by the struggles of the Parliament against the regent and Mazarin; by the bloody troubles of the Fronde faction; the revolt of Condé, etc. In 1659 peace was con-

Louis XIV.

cluded with Spain, and Louis married Maria Theresa, daughter of Philip IV of Spain. On the death of Mazarin, in 1661, Louis resolved to rule without a minister. He reformed the administration and the taxes, and made the famous Colbert superintendent, who accomplished a series of financial reforms, created the Company of the Indies, made roads, canals, and founded manufactures. In 1662 he purchased Dunkirk for 5,000,000 livres from the needy Charles II. On the death of his father-in-law he claimed Franche-Comté and Flanders, and invaded those territories, Turenne and Condé leading his armies, in 1667. In 1672 he declared war with Holland, and in a few weeks he had conquered three provinces; but the formation of the Grande Alliance between the Emperor, William of Orange, Spain, Denmark, etc., checked his ambition. Still the Treaty of Nimeguen (1678) left Louis in possession of Franche-Comté and a part of Flanders. Louis was now at the height of his glory, and the splendor of his court, adorned by whole groups of great generals, poets, philosophers and notable men, far outshone that of other European courts. Maria Theresa having died in 1683, he secretly married Madame de Maintenon about 1684 or 1685. She is said to have had a considerable part in the revocation of the Edict of Nantes, which drove so many industrious Protestants into exile. (See *Nantes*.) The League of Augsburg was now formed against Louis by Spain, Holland, England, Sweden, etc. A general war continued with frequent and severe losses to the French till the Peace of Ryswick (1697), by which Louis was required to restore all his recent conquests and most of the acquisitions made since the Peace of Nimeguen. The question of the Spanish Succession once more brought Louis into conflict with a united Europe. The principal episodes of the war were the victories of Blenheim, Ramillies and Malplaquet, gained by Marlborough and Prince Eugène. Hostilities were terminated by the Peace of Utrecht in 1713, without altering the relative position of the combatants. Louis died on September 1, 1715, and was succeeded by his great-grandson Louis XV. While the reign of Louis was brilliant in many particulars, it left France impoverished and most of her industries in a languishing condition.

Louis XV, the great-grandson of Louis XIV, was born in 1710; commenced his reign in 1715, but did not actually assume the government himself till 1723. In the interval the country was under the regency of the Duke of Orleans (see *Orleans*), by whose folly, and by the rash financial schemes of John Law (see *Law*), it was brought to the verge of ruin. In 1726 Louis placed his tutor, Cardinal Fleury, at the head of the administration. In 1725 he had married Maria, daughter of Stanislaus Leczynski, the dethroned king of Poland, and in 1733 became involved in a war in support of his father-in-law's claims. After two campaigns he acquired for Stanislaus the Duchy of Lorraine. After the death of Charles VI, in 1740, the war of the Austrian Succession broke out, in which the victories of Count Maurice of Saxony gave new splendor to the French arms; and by the Peace of Aix-la-Chapelle, in 1748, France regained her lost colonies. Louis now began to sink into the grossest indolence and sensuality, abandoning the management of state affairs to Madame de Pompadour, who recklessly squandered the public money. From 1769 he was controlled by Madame du Barry, who is said to have cost the royal treasury in five years 180,000,000 livres. The Seven Years' war (1756-63), in which France was involved, brought severe losses and humiliations to the country, and transferred to Great Britain Canada, Cape Breton, and other territories. Under the auspices of the Duke de

Choiseul the Jesuits were expelled from France in 1764. In 1771 a quarrel between the new prime minister, the Duke d'Aiguillon, and the Parliament induced the king to banish the members of the Parliament from Paris, and soon after to abolish parliaments entirely. Louis died in 1774 of smallpox, leaving a debt of $800,000,000 and a demoralized kingdom.

Louis XVI, King of France, grandson of Louis XV, was born in 1754, and in 1770 married Marie Antoinette of Austria. He ascended the throne in 1774. His moral character was far superior to that of the previous king; but his weakness and want of decision made him very unfit for wielding the scepter of a great country, especially at such a critical period. He could not comprehend the situation of affairs indeed, and had no thought of checking his personal extravagance; while the queen also gave he self up to her love of gaiety, and the festivals of Versailles and Petit Trianon were on a scale of lavish magnificence. At last, in 1789, all the grievances and discontents which had been gathering during a long period of misrule found vent; the populace attacked and destroyed the Bastille; and the revolution was accomplished. In June, 1791, the position of the king had become so perilous that he attempted to escape, but was intercepted at Varennes and forced to return. Among the events which followed were the attack of the populace of Paris on the royal palace, June 20, 1792; the king's arrest in the National Assembly, to which he had fled for refuge; finally, his trial before the convention, where he replied to the charges with dignity and presence of mind. (See *France.*) On January 16, 1793, he was declared guilty of a conspiracy against the freedom of the nation, by a vote of 690 out of 719; on the 17th he was condemned to death, by a majority of only five in 721, and on the 21st he was guillotined.

Louis XVII, titular King of France, second son of Louis XVI, was born in 1785. On the death of his elder brother, in 1789, he became dauphin, was proclaimed king by the royalists on the death of Louis XVI, was soon after separated from his mother, sister and aunt, and delivered (1793) to a shoemaker named Simon, a fierce Jacobin, who, with his wife, treated the young Capet with the most unfeeling barbarity. He survived this treatment only till June 8, 1795, when he died at the age of ten years and two months.

Louis XVIII, King of France, third son of the dauphin, the son of Louis XV, was born in 1755, and died in 1824. At the accession of his brother Louis XVI in 1774 he received the title of Monsieur. He favored the Revolution in its first stages, and secured the extended representation of the Third Estate. He lost his popularity, however, fled from Paris the same night as the king, and by taking another route reached the frontier in safety. After the death of Louis XVI, Monsieur proclaimed his nephew King of France as Louis XVII, and in 1795 he was himself proclaimed by the emigrants King of France and of Navarre. For many years he led a wandering life, supported by foreign courts and by some friends of the house of Bourbon. He at last took refuge in England in 1807, and lived there till the fall of Napoleon opened the way for him to the French throne. He entered Paris in May, 1814, had to flee on Napoleon's escape from Elba, but was replaced on the throne by the Allies after Waterloo. He was weak in character, but gained considerable esteem and affection.

Louisburg (lō'is-burg), a seaport of Cape Breton, province of Nova Scotia, Canada, on the S. E. side of the island. It was strongly fortified under the French; but was taken by the British in 1763, who demolished the fortifications, after which the town fell into ruin. It has a fine harbor with a lighthouse on the east head, and is a coal shipping port. The chief industries are fishing and shipping. Pop. 1588.

Louis d'Or (lō-ē dor; Fr., 'a Louis of gold'), or simply LOUIS, a gold coin of France, first struck in 1640, in the reign of Louis XIII, and continuing to be coined till 1795. It ranged in value from about $4.00 to $4.50. In 1810 the louis d'or was replaced by the napoleon of 20 francs, and when the coin was again struck under the restoration the same value (20 francs) was retained.

Louisiade Archipelago (lō-ē-zē-ăd'), a group of three small islands and a number of islets off the S. E. extremity of New Guinea. They became a British possession in 1885.

Louisiana (lō-ē-zi-an'a), one of the Southern States of the American Union, bounded north by Arkansas, northeast and east by Mississippi, from which it is partly separated by the river of that name, southeast and south by the Gulf of Mexico, and west by Texas, from which it is separated chiefly by the Sabine. It has an area of 48,506 square miles. The surface is generally flat and low; the delta of the Mississippi, and the land along that river, having to

be protected from inundation by levées or artificial embankments. The coast is a low swampy region producing large quantities of rice and sugar-cane; towards the north and northwest, where the highest elevation is reached, the land is less productive, but bears valuable timber. The chief rivers are the Mississippi, which runs for about 600 miles along the border of and through the State; the Red River, which crosses the State diagonally and forms an important avenue of inland commerce; the Washita, Sabine, Pearl, etc., all navigable. There are numerous 'bayous' or secondary outlets of the rivers of much importance for both navigation and drainage purposes, the chief of which are the Atchafayala with its series of lakes, the bayou Teche, bayou de Large, bayou La Fourche and bayou Bœuf. Numerous lakes and lagoons are scattered over the State, mostly landlocked bays and expansions of rivers. The total length of navigable waters is 3782 miles, Louisiana surpassing all other States in length of navigable streams. There are extensive areas, estimated at 16,000,000 acres, of densely wooded forest, pine being the most important lumber tree. The climate is semitropical, and the rainfall heavy along the coast. Coal, iron, sulphur and rock salt are found, the salt of Petit Anse Island excelling in purity the famous Turk's Island salt. Agriculture is the leading pursuit, sugar, rice, cotton and corn being the principal products. Sweet potatoes and tobacco are important crops and early vegetables are grown for the Northern market. The State is well adapted to the raising of live-stock, horses, cattle and swine being abundant. The numerous water courses abound in excellent food fish. Free education is established, and the University of Louisiana, at Baton Rouge, and other institutions are devoted to the higher education. There are about 5200 miles of railroad. The capital is Baton Rouge, but New Orleans is much the largest town. Louisiana was colonized by the French in 1699, and was ceded in 1717 to a chartered company, one of the schemes of the notorious John Law. In 1720 it was resumed by the crown; in 1763 it was ceded by France to Spain; in 1800 re-ceded to France; and in 1803 purchased from France by the United States. It was admitted into the Union in 1812. It has a large number of colored inhabitants. Pop. 1,656,388.

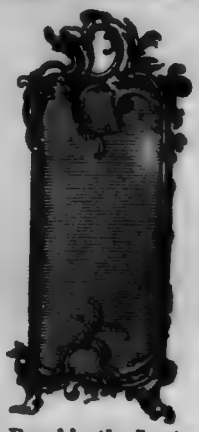
Louisiana, a city of Pike county, Missouri, on the Mississippi River, about 27 miles below Hannibal. It has flour mills, tobacco factories, planing and lumber mills, etc., and ships large quantities of tobacco, wheat, pork, etc. Pop. 4454.

Louis Philippe (lō-ē' fē-lēp), King of the French, born at Paris in 1773; died at Claremont, England, in 1850. He was the eldest son of Duke Louis Philippe Joseph of Orleans, surnamed Egalité (see *Orleans*), and during his father's lifetime he was known as Duke of Chartres. He entered the army in 1791, and favoring the popular cause in the Revolution he took part in the battles of Valmy and Jemappes; was present at the bombardment of Venloo and Maestricht, and distinguished himself at Neerwinden. Dumouriez had formed a scheme for placing him on the throne as a constitutional monarch, and being included in the order of arrest directed against Dumouriez, in 1793, he took refuge within the Austrian territory. For twenty-one years he remained exiled from France, living in various European countries, and in America. He had become Duke of Orleans on the death of his father in 1793, and in 1809 he married the daughter of Ferdinand IV of Naples. After the fall of Napoleon I he returned to France, and was reinstated in his rank and property. At the Revolution of July, 1830, he was made 'lieutenant-general of the kingdom,' and in August became king of the French. He reigned for eighteen years (see *France*), when the Revolution of 1848 drove him from the throne to England, where he remained till his death.

Louis-Quatorze Style (lō-ē-kā-tōrz), the name given to a style of architecture and internal ornamentation prevalent in France in the reign of Louis XIV, specially applied to palaces and large mansions. Externally the forms are classical, freely treated, and rustication is much employed; the windows are larger and the rooms more lofty and spacious than in buildings of the period immediately preceding, and there is generally an effort at sumptuous elegance. The palace of Versailles and the east front of the Louvre are prominent examples of the style. The most characteristic features of the Louis-Quatorze style, however, are seen in the

Panel in the Louis-Quatorze Style.

internal ornamental decoration, the great medium of which was gilt stucco-work, and its most striking characteristics are an infinite play of light and shade, and a certain disregard of symmetry of parts and of symmetrical arrangement. The characteristic details are the scroll and shell. The classical ornaments, and all the elements of the Cinquecento, from which the Louis-Quatorze proceeded, are admitted under peculiar treatment, or as accessories; the panels are formed by chains of scrolls, the concave and convex alternately; some clothed with an acanthus foliation, others plain. The name *Louis-Quinze* (lō-ē-kanz) is given to the variety of this style which prevailed in France during the reign of Louis XV. In it the want of symmetry in the details, and of symmetrical arrangement, which characterize the Louis XIV style, are carried to an extreme. It is crowded with meaningless parts devoid of beauty and expression.



Panel in the Louis-Quinze style.

Louisville (lō'ē-vil or lō'is-vil), a city, county seat of Jefferson county, Kentucky, and the principal city of the State, situated on the south bank of the Ohio, immediately above the falls. It has a river frontage of 8 miles, and is connected with the towns of New Albany and Jeffersonville on the opposite bank of the river, in the State of Indiana, by a bridge 5218 feet long. A canal 2½ miles long carries the river traffic round the falls or rapids. In addition to the large river traffic an enormous trade is carried on by railway, tobacco, whiskey, pork and flour being among the chief articles, and the railroad connections are abundant. Louisville, in fact, is the largest leaf tobacco market in the world, and is one of the greatest whiskey marts, the Kentucky whiskies, largely distilled here, having a wide reputation. The manufactures are also extensive and varied, and pork packing is very important. The principal public buildings are a fine court house, the city hall, the public library, a custom house, besides churches, asylums, and literary and scientic institutions. There are four medical colleges, the University of Louisville, and the Polytechnic Society of Kentucky. There are several attractive parks. An artesian well 2068 feet deep, having a daily flow of 330,000 gallons, forms part of the city waterworks. Pop. 223,928.

Loulé (lō-lā'), a town of Portugal, in Algarve province, 6 miles N. of Faro. It has the ruins of a Moorish castle, and is surrounded by a Moorish wall. Pop. 22,478.

Lourdes (lōrd), a French town, dep. of Hautes-Pyrénées, on the Gave de Pau. In 1858 a peasant girl declared that she had been favored with visions of the Virgin Mary in a cave in the neighborhood. Since then pilgrims have flocked to Lourdes, and a church, convent, and other buildings have been erected in connection with the cave. Pop. (1906) 7228.

Lourenco Marquez. See *Delagoa Bay.*

Louse (lous), the common name of a genus (*Pediculus*) of apterous insects, parasitic on man and other animals. The common louse is furnished with a simple eye or ocellus, on each side of a distinctly differentiated head, the under surface of which bears a suctorial mouth. There is little distinction between the thorax and abdomen, but the segments of the former carry three pairs of legs. The legs are short, with short claws or with two opposing hooks, affording a very firm hold. The body is flattened and nearly transparent, composed of eleven or twelve distinct segments. The young pass through no metamorphosis, and their multiplication is extremely rapid. Most, if not all, varieties of mammals are infested by lice, each having generally its own peculiar species, and sometimes having two or three. Three species are said to belong to man, viz. *P. vestimenti* (body louse), *P. capitis* (head louse), and *P. pubis* (crab louse).

Louth (louth), a municipal borough of England, in Lincolnshire, on the Lud, 27 miles E. N. E. of Lincoln, giving name to a parliamentary division. Carpets, soap and candles, agricultural implements, and oil-cake are manufactured. A canal extends to the Humber. Pop. (1911) 9883.

Louth, the smallest county in Ireland, in the province of Leinster, bounded by the Irish Sea and the Counties of Armagh, Monaghan and Meath; length, 28 miles; breadth, 18 miles; comprising 316 square miles. In its coastline are Carlingford Lough, Dundalk Bay, and the estuary of the Boyne. On the north it is rugged and mountainous, but in all other parts level or undulating. The soil is generally fertile, excepting on the elevated tracts. Linen is manu-

factured, and there is also some cotton-spinning. The fisheries are important. Drogheda and Dundalk (the county town) are the principal towns. Pop. 65,820.

Loutherbourg (lō'ter-borg), or more correctly, LUTHERBURG, PHILIP JAMES, a painter and engraver, born at Strasburg in 1740; died near London in 1812. In 1771 he settled in London, and in 1782 he was an Academician. As a landscape-painter he had deserved celebrity, and he excelled in battle pieces. His etchings were also highly esteemed.

Louvain (lō-van; Flemish, *Leuven*; German, *Löwen*), a town of Belgium, in the province of Brabant, on the Dyle, 15 miles east by north of Brussels. It forms almost a perfect circle; diameter nearly 2 miles. It lay in the path of the German advance in the early days of the European war (1914) and because of a shot or two fired presumably by some of the inhabitants, the splendid old city was destroyed with a wantonness that bestowed on the invaders the appellation 'Hun.' Over a thousand houses were utterly demolished with bomb and fire, and only the Hotel de Ville, of all the beautiful buildings in the city, was spared. The splendid Church of St. Pierre, the University buildings, the library and the scientific establishments were delivered to the flames. Louvain was the intellectual metropolis of the Low Countries. Pop. 45,000.

Louverture. See *Toussaint-Louverture.*

Louviers (lō-vi-ā), a town in France, in the department of Eure, 17 miles south of Rouen. The staple manufacture is woolen goods and woolen yarn. Pop. (1906) 9449.

Louvois (lō-vwà), FRANÇOIS MICHEL LETELLIER, MARQUIS DE, minister of war to Louis XIV, son of the Chancellor Letellier, born at Paris in 1641; died in 1691. He obtained the reversion of the office of secretary of war held by his father, and became sole minister of war in 1666. He effected quite a revolution in the art of disciplining, distributing, equipping and provisioning armies, and his administration was brilliant. It was partly by his advice that the Edict of Nantes was revoked in 1685, and the Palatinate was devastated in 1689. His arrogance had long rendered him odious to Louis, and his death was regarded as a relief by his master. Louvois' organization of the army lasted till the Empire; but he also undid the work of Colbert, and destroyed the commerce of France.

Louvre (lō'vr), a dome-turret rising from the roof of a hall or other apartment, formerly open at the sides, but now generally glazed. Louvres were originally intended to allow the smoke to escape when the fire was kindled in the middle of the room. *Louvre window* is the name given to a window in a church tower, partially closed by slabs or sloping boards or bars called *louvre*

Louvre, Abbot's Kitchen, Glastonbury.

boards (corrupted into *luffer* or *lever boards*), which are placed across to exclude the rain, while allowing the sound of the bell to pass.

Louvre, the old royal palace at Paris, said to have been a royal residence in the reign of Dagobert, in 628. Francis I erected that part of the palace which is now called the *old Louvre*, and the buildings have been enlarged and adorned by successive kings, particularly Louis XIV. The *new Louvre*, begun by Napoleon I, was completed by Napoleon III in 1857. The whole group of buildings is distinguished by its great extent, and by its elegant and sumptuous architecture. It contains museums of paintings, drawings, engravings, bronze antiques, sculptures, ancient and modern, together with special collections of antiquities, and an ethnographical collection. It was greatly injured by the Communists in May, 1871, the Richelieu pavilion, containing the imperial library of 90,000 volumes and many precious MSS., having been entirely destroyed.

Lovage (luv'ij), a herbaceous, perennial, umbelliferous plant, genus *Ligusticum*, widely distributed throughout temperate regions. *L. offici-*

sale, common lovage, is sometimes used as an aromatic stimulant. *L. scoticum*, found on the sea-coasts of Scotland, is occasionally used as a pot-herb.

Lovat (luv'at), SIMON FRAZER, LORD, second son of Thomas Fraser of Beaufort, afterwards twelfth Lord Lovat; born in 1667, beheaded at Tower Hill, London, in 1747. In 1699, on the death of his father, he assumed the title of Lord Lovat, to which on the death of the eleventh Lord Lovat his father had acquired a disputed claim. To secure the estates he effected a forced marriage with the Dowager Lady Lovat, for which he was outlawed and forced to take refuge in France. After a varied life of intriguing, first on the Hanoverian side and next on the Stuart, and a long imprisonment, his title, which had been objected to in various elections, was decided in his favor by the Court of Session in 1730. On the outbreak of the rebellion of 1745, Lovat acted with his usual duplicity, sending his son to fight for the Pretender, while he himself remained at home, protesting his loyalty to the Hanoverian house. This conduct brought him to trial for treason, and resulted in his execution.

Love, ALFRED HENRY, reformer, born at Philadelphia in 1830. He became a merchant, organized the American Literary Union, was vice-president of the Pennsylvania Prison Society, and in 1866 one of the founders of the Universal Peace Union and became and long remained its president. He wrote much on reform subjects and in advocacy of international peace. For many years he was an official visitor to prisons. Died in 1913.

Love Apple. See *Tomato*.

Love-bird, a name given to a genus of birds (*Agapornis* or

Swinderu's Love-bird (*Psittacula Swinderniana*).

Psittacula) of the parrot family. They are a beautiful group, consisting of very diminutive species, found in America, Africa and Australia. They receive their name from the great attachment shown to each other by the male and female birds. Swindern's love-bird is barely 6 inches in length.

Love-feast. See *Agape*.

Lovelace (luv'las), RICHARD, a poet and dramatic writer, son of Sir William Lovelace, of Norwich, where he was born in 1618. He was distinguished by his fidelity to Charles I, in whose interest he expended his whole fortune, and died in poverty in 1658. His poems were light and elegant amatory pieces. He wrote two plays, the *Scholar*, a comedy, and the *Soldier*, a tragedy.

Lover (luv'er), SAMUEL, novelist, poet and musical composer, was born in Dublin in 1797, and died in 1868. He first devoted his attention to painting, but afterwards turned to literature, and wrote novels, which he illustrated with his own pencil; dramas, operettas and songs, which he set to music. Among his works are *Legends and Stories of Ireland* (1832-34); *Rory O'More*, a novel (1837); *Songs and Ballads* (1839); *Handy Andy*, a novel (1842); *Treasure Trove*, a novel (1844). *The Angels' Whisper*, *Molly Bawn*, and the *Low-backed Car* are among his most popular songs.

Low, SETH, reformer, born at Brooklyn, New York, in 1850. He engaged in mercantile business, and in 1881 was elected mayor of Brooklyn on a reform ticket. He was made president of Columbia University in 1889, and in 1895 erected for that institution a noble library building at a cost of $1,175,000. He ran for mayor of New York in 1897 and was defeated, was elected on a fusion ticket in 1901, but was defeated on a similar ticket in 1903. In 1899 he was on the delegation representing the United States at The Hague International Peace Conference. He was a trustee of the Carnegie Institution at Washington. He died Nov. 22, 1916.

Low Church, a name given to a section of the Church of England whose opinions are opposed to those of the High Church party, and are especially hostile to ritualism and sacerdotalism. See *High Church*.

Low Countries. See *Netherlands*.

Lowe (lō), SIR HUDSON, lieutenant-general in the British army; born at Galway in 1769; died in 1844. He entered the army at an early age, and served in various campaigns. In 1813 he was attached to the army of Blücher, and

he took part in the invasion of France the following year. On the fall of Napoleon he was appointed governor of St. Helena, and entrusted with the care of the ex-emperor. He incurred the aversion of Napoleon, and many charges of undue severity were brought against him. Sir Hudson was allowed to die in poverty. His *Letters and Journals* were published in 1852.

Lowe, ROBERT. See *Sherbrooke, Viscount.*

Lowell, a city of Middlesex county, Massachusetts, at the confluence of the Merrimac and Concord rivers, on the Boston and Maine and the New York, New Haven and Hartford railroads, 25 miles north from Boston. Lowell is known as one of the largest producers of cotton goods in the United States; and has besides its cotton mills extensive bleacheries, machine shops, foundries, shoe shops, medicine plants, and rubber works. The Lowell Textile School is located here. Lowell was founded in 1822, incorporated as a town in 1826; and chartered as a city in 1837. Pop. 106,294.

Lowell (lō'el), ABBOTT LAWRENCE, college president, born at Boston, Massachusetts, in 1856. He studied law and practiced at Boston 1880-97, was a lecturer 1897-99, professor of the science of government at Harvard University 1900-03, an Eaton professor 1903-09. On the resignation of President Eliot of Harvard, in 1909, he was elected to succeed him. He is the author of various works, including *Colonial Civil Service, The Government of England, Essays on Government,* etc.

Lowell, JAMES RUSSELL, an American author, born in 1819 at Cambridge, Massachusetts, was graduated from Harvard College in 1838, and from Harvard Law School in 1840. In 1841 he published a small volume of poems entitled *A Year's Life,* and became a regular contributor to various journals, including the *Boston Courier,* in which appeared the first series of the *Biglow Papers,* mainly a satire on slavery and the Mexican war. In 1851 he traveled in Europe, and in 1855 succeeded Longfellow as professor of modern languages and belles-lettres at Harvard. From 1857 to 1862 he wrote many essays for the *Atlantic Monthly,* founded by Holmes, Longfellow, Emerson and himself, and of which he was the first editor. He was joint-editor of the *North American Review* from 1863 to 1872. In 1877 he was appointed American minister at Madrid, and in 1880 he was transferred to London, whence he was recalled in 1885. He was very popular in Britain, was made D.C.L. of Oxford and LL.D. of Cambridge, besides being elected rector of St. Andrew's University. Besides his poems, of which numerous editions have been published, and the *Biglow Papers,* his chief works are: *Fable for Critics; Conversations on some of the Old Poets; Among my Books; My Study Windows;*

James Russell Lowell

Democracy, and other Addresses, etc. He died in 1891. His first wife, MARIA WHITE LOWELL (1821-1853), was a poet of considerable merit; a volume of her poems was privately printed after her death.

Lower California, a peninsula on the Pacific coast of North America, extending about 750 miles s. of California; area 58,328 square miles; pop. 42,245. It belongs to Mexico and, with the exception of a few spots, is a sterile and unproductive region. Chief towns are La Paz, the capital, Loretto and Rosario.

Lowestoft (lō'stoft), a seaport, municipal borough, and watering place of England, county of Suffolk, occupying the most easterly point of the kingdom. Since the construction of a harbor, piers and docks, Lowestoft has risen to be a thriving and important town, and a chief seat of the fishing industry. The harbor is formed by two piers 1300 feet long. Lowestoft is much frequented for sea-bathing. Pop. (1911) 33,780.

Lowth (lowth), ROBERT, an English prelate, born in 1710; died in 1787. Educated at Winchester School and Oxford University, he was chosen professor of poetry in the latter in 1741. In 1744 he was appointed rector of Oving-

ton in Hampshire. In 1753 he published his lectures on *The Sacred Poetry of the Hebrews*, and became famous as one of the first Biblical critics of his age. Preferments flowed rapidly upon him; and he became successively Bishop of Limerick, prebend of Durham, Bishop of St. David's, of Oxford, and of London. In 1778 he published *Isaiah, a New Translation*, with a preliminary dissertation and notes, which contributed to extend his fame.

Lowther Hills (lou'*th*ĕr), a range of Scottish hills extending across the south of Lanarkshire and north of Dumfriesshire to the southern borders of Peebles and Selkirk shires, the highest summits being Green Lowther (2403 feet) and Lowther Hill (2377 feet).

Loxodromic Curve (lok-su-drom'-ik), the path of a ship when her course is directed constantly towards the same point of the compass, in a direction oblique to the equator, so as to cut all the meridians at equal angles. Mariners usually speak of lines of this kind as *rhumbs*.

Loyalty Islands (loi'al-ti), a group of islands in the Pacific Ocean, immediately east of New Caledonia, of which French colony they are appendages. They consist of the islands Uwea, Lifu and Mari, with many small islands. Total area, 841 square miles. Pop. about 20,000.

Loyola (loi-o'la), IGNATIUS, original name INIGO LOPEZ DE RECALDE, the founder of the order of the Jesuits, was descended of a noble Biscayan family, born at the castle of Loyola, Guipuscoa, in 1491; died in 1556. He was attached in his youth as a page to the court of Ferdinand and Isabella, and trained up in all the vices and frivolities peculiar to his position. When still a young man he entered the army, and during the defense of Pampeluna in 1521 against the French he was severely wounded, and a long and tedious confinement was the result. The only books he found to relieve its tedium were books of devotion and the lives of saints. This course of reading induced a fit of mystical devotion in which he renounced the world, made a formal visit to the shrine of the Virgin at Montserrat, and vowed himself her knight (1522). After his dedication he made a pilgrimage to Rome and Jerusalem, and from 1524 to 1527 attended the schools and universities of Barcelona, Alcala and Salamanca. In 1528 he went to Paris, where he went through a seven years' course of general and theological training. Here in 1534 he formed the first nucleus of the society which afterwards became so famous, François Xavier, professor of philosophy, Laines, and others having in conjunction with Loyola bound themselves together to devote themselves to the care of the church and the conversion of infidels. Rome ultimately became their headquarters, when Loyola submitted the plans of his new order to Paul III, who, under certain limitations, confirmed it in 1540. (See *Jesuits*.) Loyola continued to reside in Rome and govern the society he had constituted till his death. He was beatified in 1607 by Paul V, and canonized in 1622 by Gregory XV.

Lozère (lo-zär), a department of Southern France, bounded by Haute-Loire, Cantal, Ardèche, Gard and Aveyron; area, 1906 square miles. The department is generally mountainous; highest peak, Mount Lozère, rising 4884 feet. The general character of the department is pastoral, immense numbers of sheep and goats being reared. The rivers Allier, Lot and Tarn rise within the department, which belongs to the basins of the Loire, the Rhône and the Garonne. Neither manufactures nor trade have made much progress. The capital is Mende. Pop. (1906) 128,016.

Lualaba (lō-a-lä'bä), a river in the interior of Southern Africa forming a tributary of the Upper Congo.

Lubbock (lub'ok), SIR JOHN, scientist, was born in London in 1834; died in 1913. He joined his father's banking business in 1848. He entered parliament in 1870 as member for Maidstone; and after 1880 he represented London University. He became a recognized authority on financial and educational questions, and his name was associated with several important public measures, such as the Bank Holiday and Ancient Monuments Acts. He was also distinguished as a man of science, being author of *Prehistoric Times; Origin of Civilization; Origin and Metamorphoses of Insects; Monograph on the Thysanura and Collembola; British Wild Flowers in their Relation to Insects*. He was raised to the peerage as BARON AVEBURY, 1900. His father, SIR JOHN WILLIAM, born in 1803; died in 1865; was a well-known banker, and published several scientific works of considerable value in their day, chiefly relating to astronomy.

Lübeck (lü'bek), one of the free towns of Germany, and a constituent of the German Empire, stands on a low ridge at the confluence of the Wackenitz with the Trave, 38 miles northeast of Hamburg, and 12 miles from

the Gulf of Lübeck, a bay of the Baltic. It was formerly surrounded by walls and bastions, which have been leveled down and converted into pleasant walks; but it is still entered by four gates, and furnishes striking specimens of the architecture of the fifteenth and sixteenth centuries. Among the buildings are the cathedral, a structure of red brick, begun in 1173, surmounted by two spires 416 feet high, and containing a choir-screen regarded as one of the finest specimens of wood-carving in existence; the Marienkirche (St. Mary's Church), a fine specimen of early Gothic; the Ægidienkirche (St. Giles' Church), and the Petrikirche (St. Peter's Church); the town or senate house, an ancient Gothic building; the Hospital of the Holy Ghost (thirteenth century); the Holstein Gate, with its two lofty towers, etc. There is a public library of about 100,000 vols. The manufactures are comparatively unimportant, but the trade is extensive, especially with Hamburg, the Baltic ports, and the interior of Germany. Lübeck possesses a territory of 116 square miles, and includes the port of Travemünde, and several isolated portions in Holstein and Lauenburg. It has a senate of 14 members and a council of burgesses of 120 members. It became an imperial free city in 1226, and about thirty years later it also became the head of the Hanseatic League. (See *Hanse Towns.*) Pop. (1910) 116,500.

Lübke (lüb'ké), WILHELM, art historian, born at Dortmund in Westphalia in 1826; professor of architecture at Berlin in 1857; of art history at Zurich in 1861, at Stuttgart in 1866; called to a similar post at Karlsruhe in 1885. He was the author of a *History of Art*, *History of Sculpture*, etc. He died in 1893.

Lublin (lyü'blyen), a town of Russian Poland, capital of the government of Lublin, 60 miles southeast of Warsaw. It is well built, has manufactures of cloth candles, soap, etc., and a large trade. Among its notable buildings are the cathedral, dating from the thirteenth century, and the town hall. Pop. 65,870.—The government of Lubin has an area of 6499 square miles. Pop. 1,362,500.

Lubricant (lü'bri-kant), any substance applied to surfaces that work against each other, to diminish friction. Lubricants may be either solid, semi-liquid, or liquid. Plumbago, grease, animal, vegetable and mineral oils, simple or variously compounded, are the substances used.

Luca Giordano (also called *Luca Fa Presto*). See *Giordano.*

Lucan (lü'kan), in full, MARCUS ANNÆUS LUCANUS, a Roman poet, nephew of the philosopher Seneca, born at Corduba, in Spain, about A.D. 38. Lucan went to Rome when a child, and having obtained celebrity at an early age by his talents, excited the jealousy of Nero, who himself aspired to literary honors, and was forbidden by the tyrant to recite in public. This induced Lucan to join the conspiracy of Piso. The plot was discovered, and Lucan died by having his veins opened (A.D. 65). Of his poems only his *Pharsalia*, an unfinished description of the civil war between Cæsar and Pompey, has come down to us. It possesses the highest poetical excellencies disfigured by great faults, which are easily explained by the youth of the author, and the fact that it probably did not receive his final revision.

Lucan, GEORGE CHARLES BINGHAM, EARL OF, born in 1800; died in 1888. He entered the army in 1816; accompanied the Russian army as a volunteer in 1828; succeeded his father 1839; was elected an Irish representative peer in 1840; was commander of a cavalry division in the Crimea, and wounded before Sebastopol. His name is conspicuously associated with the Balaklava charge of the Light Brigade. He was lieutenant-general in 1858; general in 1865; and was also made field-marshal in 1887.

Lucania (lü-kā'ni-a), an ancient division of S. Italy, which extended across from the Tyrrhenian Sea to the Gulf of Tarentum. The Lucanians were a branch of the Samnite nation, and were subdued by the Romans in B.C. 272. Lucania comprised the modern province of Basilicata, the greater part of Principato Citeriore, and the north part of Calabria.

Lucayos. See *Bahamas.*

Lucca (lü'ka), a town of Italy, capital of a province of same name, stands near the left bank of the Serchio, 37 miles N. N. W. Florence. It is well built, with well-preserved fortifications and many interesting churches, including the cathedral of S. Martino. The Palazzo Pubblico, formerly the Ducal Palace, contains a picture gallery. The manufactures consist chiefly of silk goods, woolen cloth and oriental fezes. Pop. 76,160. First an Etruscan, then a Ligurian town, Lucca afterwards became a Roman colony. It subsequently was annexed to the Frankish and German empires, and early in the twelfth century, along with its territory, became a republic. During the middle ages its history is intimately connected with that of Flor-

ence and Pisa. It was occupied by the French in 1799, and together with Piombino was formed into a principality in 1805, and given by Napoleon to his sister Elise. The Congress of Vienna in 1814 erected it into a duchy, and gave it to the Infanta Maria Louisa, duchess of Parma, whose son ceded it to Tuscany. In 1860 it became part of the Kingdom of Italy. The province of Lucca is bounded N. by Massa e Carrara and Modena, E. by Firenze, S. by Pisa, W. by the Mediterranean; area, 577 square miles. It is mountainous in the north, but, on the whole, is better cultivated than most parts of Italy. Silk, oil, corn and fruits are the chief productions. Pop. 319,123.

Lucena (lō-thā'nä), a city of Spain, in Andalusia, in the province and 30 miles S. S. E. of Cordova. Pop. 21,284.

Lucera (lō-chā'rä; ancient *Luceria*), a town of South Italy, province of Foggia, 11 miles W. N. W. of Foggia. The principal edifices are a cathedral, once a mosque, the castle, an interesting example of a mediæval stronghold, etc. Pop 17,515.

Lucernaria (lō-ser-nā'ri-a; Latin, *lucerna*, a lamp), the typical example of the Lucernaridæ, an order of the Hydrozoa, nearly allied to the Medusidæ or jelly-fishes. The most familiar member is the *Lucernaria auricula*, a little organism somewhat bell-shaped, and which is frequently found adhering by the smaller end to sea-weeds, etc. In the center of the bell-shaped end is an opening into the cavity of the body, which is the stomach. It can detach itself at will and swim freely about by contracting and expanding the bell-shaped disc or 'umbrella,' as it is technically called.

Lucerne, LUZERN (lō-sern', lō-tsern'), a city of Switzerland, capital of a canton of the same name, beautifully situated on the margin of Lake Lucerne and on the Reuss, where it emerges from the lake. On the land side the town is surrounded by walls and watch towers, and the river is spanned by four bridges, two of which are roofed-in and covered with ancient paintings. The Court Church, Jesuit Church, and the town house are among the most interesting buildings, the latter containing a picture gallery and museum. The 'Lion of Lucerne,' a monument by Thorwaldsen to the Swiss guards who fell in Paris in 1792 while defending the Tuileries, and the glacier-garden, containing relics of the ice period, are objects of interest. Lucerne is one of the three seats of the Swiss Diet, has an important grain market and manufactures of silk and cotton fabrics and of carriages. Pop. 41,500. The canton is bounded by the cantons of Aargau, Zug, Schwyz, Unterwalden and Bern; area, 587 square miles. The surface is very much broken by ramifications of the Bernese Alps, but none rise above the line of perpetual snow. The Tomlishorn, the culminating point of Mount Pilatus, and of the canton, is 7116 feet above sea-level. The chief rivers are the Reuss, the Aa, Suren, Wigger, etc. Lucerne is well supplied with lakes. Within its own boundaries it has those of Sempach and Baldegg, with many more of smaller size; with Zu[illegible] shares the Lake of Zug, and with [illegible]nterwalden and Schwyz the Lake of Lucerne. The soil generally is fertile. The pastures are extensive and excellent. German is the language spoken, and the greater part of the inhabitants profess the Roman Catholic religion. Pop. 146,519.

Lucerne, LAKE OF, VIERWALDSTATTER-SEE, or LAKE OF THE FOUR FOREST CANTONS, a Swiss lake bounded by the cantons of Uri, Schwyz, Unterwalden and Lucerne, and noted for its magnificent scenery and historical associations. It is nearly cruciform in shape, the bays of Lucerne, Küssnacht, and Alpnach forming the head and arms while the foot is formed by the Bay of Buochs and lake of Uri. Length from Lucerne to Flüelen 27 miles, from Alpnach to Küssnacht at the extremities of the arms about 24 miles; width from 1 to 3 miles; greatest depth 510 feet.

Lucerne (*Medicago*), a genus of leguminous plants containing at least ninety species. The purple medick (*M. sativa*) is a valuable pasture and forage plant extensively cultivated in some of the chalky districts of England and France, and also in America. It is perennial and yields two or more crops in the year. In California it is known by the Spanish name of *Alfalfa*.

Lucia (lō'shi-a), ST., a Christian virgin martyr of Syracuse, who lived in the reign of Diocletian. She is the patroness of the laboring poor, and is invoked for eye disease.

Lucia, ST., BAY OF, an almost land-locked bay on the coast of Zululand, E. South Africa, lat. 28° S.

Lucia, ST., one of the British West India Islands, 21 miles north by east of St. Vincent, and 20 miles south of Martinique; area about 245 square miles. It is of volcanic origin, and has generally an elevated, rugged and mountainous surface. It is very fertile, and has some splendid scenery, but is very unhealthy and infested with venom-

ous serpents and insects. The chief exports are sugar, rum, and cocoa. Castries, the capital, has 7910 inhabitants. Pop. 50,934, of whom about 1000 are white.

Lucian (lū'she-an), a Greek satirist and humorist, who was born at Samosata, on the banks of the Euphrates, and lived between A.D. 120 and 200. Little is known of his life, but he is said to have made money as a rhetorician or a lawyer, to have spent much time in traveling, and to have lived for long intervals in Athens. His works are of a witty and satirical character, the most popular being those known as the *Dialogues*, in which he ridicules the popular mythology and the philosophical sects, particularly his *Dialogues of the Gods* and *Dialogues of the Dead*. He may be regarded as the first of the great humorists.

Lucifer (lū'si-fèr; or in Greek, *Phōsphoros*, both meaning *light-bearer*), a name anciently given to the planet Venus as the morning star. The term is used figuratively by Isaiah (xiv. 12) and applied to the Babylonian king, but it was mistaken by the commentators for a reference to Satan.

Lucifer-match. See *Matches*.

Lucilius (lū-sil'i-us), CAIUS ENNIUS, a Roman knight, grand-uncle to Pompey the Great; born at Suessa B.C. 148; died at Naples about 103 B.C. He is considered the inventor of the Roman satire, because he first gave it the form under which this kind of poetry was carried to perfection by Horace, Juvenal and Persius. Of thirty satires which he wrote only some fragments have been preserved.

Luckenwalde (luk'en-vàl-dè), a town of Prussia, 31 miles south of Berlin. It has cloth manufactories and numerous other industrial establishments. Pop. (1905) 22,263.

Lucknow (luk-now'); more correctly LAKHNAU), a city of Hindustan, capital of Oude, 610 miles W. N. W. of Calcutta, on both banks of the Gumti, here crossed by four bridges, two of which were built by native rulers, and two by the British since 1856. It ranks fourth in size among British Indian cities, being next after Calcutta, Madras and Bombay. It presents a picturesque view from a distance, and has some good streets and interesting edifices. Among the most notable buildings are the Kaisarbagh, a palace built by King Wajid Ali in 1850 at a cost of $4,000,000, now occupied as government offices; the Imâmbarra or mausoleum of Asoof ud Dowlah, now an arsenal and store-houses; the great mosque called the Jamâ Masjid, now a jail; and the Hoseinabad or Small Imâmbarra, with the mausoleum of Mohammed Ali. Lucknow was one of the chief scenes of the Sepoy mutiny. At the beginning of the mutiny the Residency was fortified by Sir Henry Lawrence, and after his death (July 4, 1857) it was closely besieged by the rebels till relief was brought by Havelock and Outram. The relieving force was only a small one, however, and the British were again besieged, partly in the Residency, partly in a walled garden called the Alambâgh. In the middle of October Sir Colin Campbell gained possession of the place after severe fighting; but as it seemed impossible to hold it with the troops at his disposal he left Sir James Outram to defend the Alambâgh, and removed the civilians, women and children to Cawnpore. At last, in March, 1858, Sir Colin returned with a sufficient force, completely defeated the rebels, and permanently recovered the town. Pop. 264,049.

Lucretia (lū-krē'she-a), in Roman legendary history, a lady of distinguished virtue who was outraged by Sextus, son of Tarquinius Superbus, king of Rome. She stabbed herself, and her death was the signal for a revolution, by which the Tarquins were expelled from Rome and a republic formed.

Lucretius (lū-krē'she-us), CARUS, TITUS, a Roman philosophic poet, born about 98 B.C.; died in 55 B.C. He is said to have died by his own hand, but about his life almost nothing is known. He is admitted to be one of the greatest of Roman poets for descriptive beauty and elevated sentiment. We possess of his composition a didactic poem, in six books, *De Rerum Natura* ('On the Nature of Things'), in which he exhibits the cosmical principles of the Epicurean philosophy. The best English edition of Lucretius is that of H. A. J. Munro, with translation.

Lucullus (lū'kul-us), LUCIUS LICINIUS, a distinguished Roman naval and military commander, born about B.C. 115; died in B.C. 56. He distinguished himself greatly in his various victorious campaigns against Mithridates, king of Pontus, from the time of Sulla to B.C. 66, when he was supplanted by Pompey. He thenceforward lived in luxurious retirement on the coast of Campania. His house was enriched with a valuable library and works of art, which were freely opened to the curious and learned, among whom was his friend Cicero.

Luddites (lud'its), a name given to rioters in 1811-16 in Yorkshire, Lancashire and Nottingham, who attributed the prevailing distress to the introduction of machinery. During these years the above counties were in a perpetual state of disturbance, and much damage to machinery was done by the rioters. They took their name from Ned Ludd, a half-witted lad who made himself notorious by destroying stocking frames. After the peace, with the return of prosperity, the riots ceased.

Lüdenscheid (lü'den-shīt), a town of Prussia, province of Westphalia, 21 miles southwest of Arnsberg, with extensive manufactures of metal goods and hardware. Pop. 28,921.

Ludhiana (lud-hi-ä'na), a town of India, province of Punjab, Sutlej; a great central grain mart. Pop. 48,649.

Ludington (lud'ing-ton), a city of Michigan, seat of Mason county, on Lake Michigan, at mouth of Père Marquette River. It has a good harbor and a large export trade in lumber, also salt works, canning industries, woodworking shops, game board and watchcase factories, etc. Pop. 9132.

Ludlow (lud'lō), a municipal borough of England, in Shropshire, on the river Teme, 27 miles south by east of Shrewsbury. The remains of the ancient castle of Ludlow have an interesting and picturesque appearance. Pop. (1911) 5926.

Ludlow, EDMUND, the eldest son of Sir Henry Ludlow, was born about 1620. He served with distinction in the parliamentary army, and succeeded Ireton in the government of Ireland in 1651. He opposed Cromwell's assumption of the protectorate, and agitated in favor of a republic. On the approach of the Restoration he retired to Switzerland, and died in exile 1693. He is the author of valuable *Memoirs*.

Ludlow Rocks, in geology, a portion of the upper Silurian rocks, characteristically developed at Ludlow in Shropshire.

Ludwig, the German form of the name *Lewis, Louis*. See *Louis*.

Ludwigsburg (lud'vihs-burk), a town of Germany, in Würtemberg, 8 miles north of Stuttgart. It is the second royal residence of the kingdom, and has a large royal palace. Pop. (1905) 23,093.

Ludwigshafen (lud'vihs-hä-fn), a town of Rhenish Bavaria, on the left bank of the Rhine, opposite Manheim, with which it communicates by a railway bridge and steam ferry. It was founded in 1843 by Louis I of Bavaria, and has become a flourishing town with numerous chemical and other works. Pop. (1905) 72,168.

Lufiji. See *Rufiji*.

Lugano (lō-gä'nō), a town of Switzerland, in the canton of Ticino, beautifully situated on the north shore of the lake of same name, 15 miles northwest of Como. Pop. 9394.—The LAKE OF LUGANO, partly in canton Ticino and partly in Italy, between Lakes Como and Maggiore, into the latter of which it discharges itself; is about 20 miles long by 1½ miles broad. Its scenery is of a wild and romantic description.

Lugansk (lō-gansk'), a Russian town, government of Ekaterinoslav, on the Lugan, a branch of the Donetz, 300 miles N. N. W. of Taganrog. It is the chief center of an important coal and iron district. Pop. 34,175.

Lugger (lug'er), a vessel having either two or three masts and a running bowsprit, the masts carrying each

Lugger.

one or two lug-sails. There are also two or three jibs.

Lugo (lō'go), a town of Northern Spain, capital of province of same name, on left bank of the Miño, 46 miles west by south of Santiago. It is surrounded by ancient walls, which now serve as a promenade; has a Gothic cathedral of the twelfth century, several old churches, an episcopal palace, etc. Pop. 26,959.

Lugo, a town of Italy, province of Ravenna, 30 miles S. E. of Ferrara. It has an important annual fair, and a trade in flax, wine, brandy, etc. Pop. (commune) 27,410.

Lugos (lō'gosh), a Hungarian town on the Temes, 32 miles E. S. E. of Temesvar. It is the seat of Greek and

Latin bishops, and has an active trade. Pop. 16,126.

Lug-sail, a quadrilateral sail bent upon a yard which hangs obliquely to the mast.

Lugworm. See *Lobworm.*

Luini (lu-ē'nē), BERNARDINO, a painter of the Lombard school, and the most distinguished pupil of Leonardo da Vinci, was born at Luino, a village on Lake Maggiore, about 1475; died perhaps about 1540. His works both in oil and fresco are much admired. Of the latter, one of the most important is a *Crucifixion* of great size and with various supplementary scenes, on the wall of a chapel at Lugano. He has also some merit as a poet, and is said to have written a treatise on painting. Two of his sons, Evangelista and Aurelio, and a brother named Ambrogio had a reputation as painters.

Luitprand. See *Liutprand.*

Luke (lōk), ST., the evangelist, author of the Gospel which bears his name and of the *Acts of the Apostles.* He was probably born at Antioch in Syria; was taught the science of medicine, but the tradition that he was also a painter is doubtful. The date of his conversion is uncertain; he is supposed to have been one of the seventy disciples, and also one of the two who journeyed to Emmaus with the risen Saviour. He was for several years a companion of the apostle Paul in his travels, so that in the Acts of the Apostles he relates what he himself had seen and participated in. (See *Acts of the Apostles.*) Luke is apparently mentioned three times in the New Testament: Col. iv, 14; 2 Tim. iv, 11; Philem. 24. He lived to an advanced age, but whether he suffered martyrdom or died a natural death it is impossible to determine. The Gospel of St. Luke was written probably about 58-60. It is addressed to a certain Theophilus, and records various facts connected with the early life of Jesus which were probably furnished to the writer by Mary herself. It is first quoted by the church writers Justin Martyr and the author of the Clementine Homilies, and at the time of Irenæus and Tertullian the gospel in its present form was fully accepted. See *Gospel.*

Luke of Leyden (*Lucas van Leyden*), a Dutch painter and engraver, born at Leyden in 1494; died in 1533. He was an intimate friend of Albert Dürer, and executed many paintings in oil, water-colors, and on glass: likewise a multitude of engravings, which spread his fame widely. The fullest and most beautiful collection of engravings by this master is in the library at Vienna. His paintings are to be met with in many galleries; the principal in Leyden, Vienna, Dresden, Munich and Florence.

Lully (lu-lē), JEAN BAPTISTE, musical composer, born at Florence in 1633; died at Paris in 1687. At ten years of age he became page to Mlle. de Montpensier, niece of Louis XIV. In course of time he became court musician and leader of the king's band. In 1672 he had the direction of the Royal Academy of Music, from which times dates the foundation of the grand opera. He wrote numerous operas, motets, and other compositions, but his fame now chiefly rests on his overtures, a species of composition of which he is said to have been the inventor.

Lully (lŭ'lē), RAYMOND (*Doctor Illuminatus*), a distinguished scholastic philosopher, born in Majorca about 1235; died in Algeria in 1315. When about 30 years of age he renounced the world and devoted himself to philosophy and religion. Encouraged by visions, he undertook the task of studying the eastern languages in order to convert the Moslems. For this purpose he made several journeys into Northern Africa, during one of which he was stoned to death. He was canonized in 1419. The number of his works is usually estimated at 300. They include treatises on logic, metaphysics, grammar, theology, casuistry, geometry, astronomy, medicine, etc., and the so-called 'Lullian art.' The *Ars Lulliana,* once extensively taught throughout Europe, consists mainly in categorizing ideas and combining them mechanically, by which means Lully thought to exhaust their possible combinations.

Lumbago (lum-bā'gō; from *lumbus,* the loin), rheumatism or rheumatic pains affecting the lumbar region, and often disabling a person. See *Rheumatism.*

Lumber (lum'bĕr), the common term in the United States for timber sawn up for market, including laths, deals, planks, shingles, etc. The lumber industry is fourth among the great industries of the United States, and the heavy demands for timber are rapidly pushing the great lumbering centers toward the South and West, the East and center being largely worked out. In normal years about 40 billion board feet of lumber are produced, valued at about $700,000,000. As a result the great pineries of the Lake States have been almost eliminated, and great inroads are being made

on the supply of timber in all parts of the country. At present the far west State of Washington leads in production, followed by Louisiana, Texas, Mississippi, Wisconsin and Arkansas. The forest lands of the United States are estimated to cover 600,000,000 acres. Yet, great as is the supply, it cannot long continue to meet the enormous demand, especially under the wasteful methods still largely used, and a general system of conservation is imperatively necessary. The railroads make an annual drain on our forest resources of 112,000,000 cords, equivalent to 3¾ billion board feet; 2½ billion feet are used for mine timber, paper manufacture consumes about 3,500,000 cords, and the many other uses of lumber account for the remainder of the annual drain. Among the efforts made to stop this drain is the utilization of the formerly waste products of lumber and the earnest efforts to prevent the frightfully destructive forest fires. In the salvage processes even such material as sawdust is utilized, French cabinet makers having succeeded in converting this, by aid of the hydraulic press and high heat, into a solid substance that may be molded into any shape and receive a high polish.

Luminiferous Ether (lū-min-if'e-rus), a hypothetical medium of extreme tenuity and elasticity, supposed to be diffused throughout all space, as well as among the molecules of which solid bodies are composed, and to be the medium of the transmission of light, heat, and other forms of energy. From the extreme facility with which bodies move about in this medium it might be called a fluid; but the undulations which it serves to propagate are not such as can be propagated by fluids. Its elastic properties are rather those of a solid; and its waves are analogous to the pulses which travel along the wires of a piano rather than to the waves of extension and compression by which sound is propagated through air. Much yet needs to be learned, however, about its true characteristics. See *Undulatory Theory.*

Luminosity. See *Flame* and *Phosphorescence.*

Lummis, Charles F., American author and explorer, born in Lynn, Mass., in 1859, and graduated at Harvard in 1881. After some newspaper work in Ohio, he walked across the continent to Los Angeles. He devoted years to the study of Indian languages and customs and founded the Southwest Archæological Institute of America. His books include *Some Strange Corners of Our Country, The Spanish Pioneers, The Enchanted Burro, Mexico Today,* etc.

Lump-fish, or **Sucker** (*Cyclopterus lumpus*), an acanthopterygious fish, so named from the clumsiness of its form. The back is arched and sharp, the belly flat, the body covered with numerous bony tubercles, the ventral fins modified into a sucker. Before the spawning season it is of brilliant crimson, orange, purple and blue, but afterwards changes to a dull blue or lead color.

Luna (lū'na), the Latin name for the moon, among the Greeks *Selēnē.* Her worship is said to have been introduced among the Romans in the time of Romulus.

Lunacy (lū'na-si), in law. 'A lunatic,' says Blackstone, 'is one that hath had understanding, but by disease, grief, or other accident hath lost the use of his reason.' In the United States the legislature exercises a protective authority over idiots and lunatics. The statutes of the different States provide that such persons may be put under guardianship: and if a competent judicature have found the fact of lunacy in the prescribed mode, and have appointed a guardian, the fact of lunacy is held to be conclusively proved. Until the contrary has been shown, every person is supposed to be of sound mind. In criminal cases lunatics are not chargeable for their own acts, if committed when laboring under defect of understanding. By the common law, if a man in his lucid mentality commits a capital offense, and before arraignment for it becomes mad, he ought not to be arraigned for it, because he is not able to plead with that caution which he ought to possess. But in general, partial unsoundness will form no defense. See *Lunatic Asylums.*

Lunar Caustic, nitrate of silver. See *Silver.*

Lunar Theory, the mathematical treatment of perturbations in the moon's motion due to the attraction of the sun, the earth and the planets. See *Moon.*

Lunar Year. See *Year.*

Lunatic Asylums, houses established for the treatment of insane persons. Some are established by law, others by the endowments of charitable donors, while others are private establishments. Until near the close of the eighteenth century many lunatics were allowed to wander at large, exposed to all the arbitrary cruelty to which their defenceless condition made them liable, while those who were confined in asylums were in a still worse case. Chains, whipping and confinement in dark dungeons were among the ordinary

discipline of these establishments. The reformation of this unnatural system was begun in France by Philippe Pinel, a benevolent physician; and in England a parliamentary inquiry in 1815 into the barbarities hitherto practiced in lunatic asylums led to a slow but gradual improvement. Lunatic asylums, whether public or private, are now under the control of officers appointed under special statutes, and lunatics must be visited at least once a year by medical and legal visitors. The general conduct of lunatic asylums is now brought more into harmony with humanity and common sense, and with very beneficial results. Violence and undue coercion have been generally abandoned.

Lund (lönd), a town of Sweden, län of Malmö, about 8 miles from the Sound and 24 miles E. of Copenhagen. It is the see of an archbishop, has an ancient cathedral and a university possessed of a library of more than 120,000 volumes. Pop. 16,621.

Lundy Island, a granitic island belonging to England, County Devon, at the entrance of the Bristol Channel, 2½ miles long and 1 broad; area, about 1000 acres, mostly in pasturage. On it is a lighthouse visible for 30 miles.

Lüneburg (lü'ne-burh), a town of Prussia, province of Hanover, on the Ilmenau, 28 miles southeast of Hamburg. There are various interesting buildings, including the townhouse, a structure dating in part from the thirteenth century. Near the town are extensive gypsum and lime quarries and a salt mine. Pop. (1910) 27,790.

Lunel (lü-nel), a town of France, department of Hérault, 15 miles E. N. E. Montpellier. Pop. 6712.

Lunette (lö'net), in the art of fortification, a detached outwork having two faces and two flanks. It is often used in field fortifications, or before the glacis of a permanent fortress to protect a weak point.

Lunéville (lü-nā-vēl), a town of Eastern France, department of Meurthe-et-Moselle, near the junction of the Vezouse with the Meurthe, 15 miles E. S. E. Nancy. It has generally straight streets, a palace, built by Leopold, duke of Lorraine, and now partly serving as cavalry barracks; manufactures of gloves, pottery, etc. The treaty of peace in 1801, by which, as a consequence of the battle of Marengo, the Rhine became the French frontier, was signed here. Pop. 25,587.

Lungs, the breathing organs of reptiles, birds, mammals, and in part of amphibians (frogs, newts, etc.), the latter forms breathing in early life by branchiæ or gills, and afterwards partly or entirely by lungs. The essential idea of a lung is that of a sac communicating with the atmosphere by means of a tube, the *trachea* or windpipe, through which air is admitted to the organ, and through structural peculiarities to its intimate parts,

HUMAN LUNGS, HEART AND GREAT VESSELS.
A, Lungs with the anterior edges turned back to show the heart and bronchi. B, Heart. C, Aorta. D, Pulmonary artery. E, Ascending vena cava. F, Trachea. GG, Bronchi. HH, Carotid arteries. II, Jugular veins. JJ, Subclavian arteries. KK, Subclavian veins. PP, Costal cartilages. Q, Anterior cardiac artery. R, Right auricle.

the air serving to supply oxygen to the blood and to remove carbonic acid. In the mammalia, including man, the lungs are confined to and freely suspended in the cavity of the thorax or chest, which is completely separated from the abdominal cavity by the muscular diaphragm or 'midriff.' In man the lungs are made up of honeycomb-like cells which receive their supply of air through the bronchial tubes. If a bronchial tube is traced it is found to lead into a passage which divides and subdivides, leading off into air-cells. The walls of these air-cells consist of thin, elastic, connective tissue, through which run small blood-vessels in connection with the pulmonary artery and veins. By this arrangement the blood is brought into contact with, and becomes purified by means of the air. The impure blood enters at the root of the lung through the pulmonary artery at the right side of the heart, and passes out purified through the pulmonary veins towards the left side of the heart. Both lungs are inclosed in a delicate membrane called the *pleura*, which forms a kind of double sac that on one side lines the ribs and part of the breast-bone, and on the other side surrounds the lung. Pleurisy arises from inflammation of this membrane. The

lungs are situated one on each side of the heart, the upper part of each fits into the upper corner of the chest, about an inch above the collar-bone, while the base of each rests upon the diaphragm. The right lung is shorter and broader than the left, which extends downwards further by the breadth of a rib. Each lung exhibits a broad division into an upper and lower portion or *lobe*, the division being marked by a deep cleft which runs downwards obliquely to the front of the organ; and in the case of the right lung there is a further division at right angles to the main cleft. Thus the left lung has two, while the right lung has three lobes. These again are divided into *lobules* which measure from ¼ to ½ inch in diameter, and consist of air-cells, blood-vessels, nerves, lymphatic vessels, and the tissue by which the lobules themselves are bound together. The elasticity of the lungs by which they expand and expel the air is due to the contractile tissues found in the bronchial tubes and air-cells, this elasticity being aided by a delicate, elastic, surface tissue. (See *Respiration.*) The lungs are popularly termed 'lights,' because they are the lightest organs in the body, and float when placed in water, except when they are diseased; a characteristic this which is applied in medical jurisprudence as a test whether an infant has respired or not. Among the diseases which affect this organ are pleurisy, pneumonia, pleuro-pneumonia, consumption, etc. See those terms.

Lungwort (lung'wurt), *Pulmonaria officinalis*, nat. order Boraginaceæ, a common garden flower, having red and purple tubular blossoms, and leaves speckled like diseased lungs, hence an old-fashioned remedy in pulmonary diseases. A kind of hawk-week (*Hieracium pulmonarium*) and a lichen (*Sticta pulmonaria*) receive the same name.

Lupercalia (lō-per-ka'li-a), a Roman festival celebrated annually in honor of Lupercus, an ancient pastoral god, afterwards identified with the Arcadian Pan. It was celebrated on February 15, at the Lupercal, a grotto in the Palatine Hill at Rome. Goats were sacrificed, and two youths were arrayed in the skins. With thongs in their hands they ran through the streets of the city striking all persons they met, particularly women, who believed that a blow from the thong prevented sterility.

Lupercus. See *Lupercalia.*

Lupine (lō'pin; *Lupinus*), a very extensive genus of hardy annual, perennial, and half-shrubby plants, some of which are cultivated in gardens for the sake of their gaily-colored flowers. They belong to the nat. order Leguminosæ.

Lupulin (lō'pū-lin), a fine yellow powder of [illegible]s, which contains the bitter principle. It consists of little round glands, which are found upon the stipules and fruit, and is obtained by drying, heating, and then sifting the hops. It is largely used in medicine.

Lupus (lō'pus), in medicine, a slow, non-contagious tubercular skin affection, occurring especially about the face, and commonly ending in ragged ulcerations of the nose, cheeks, forehead, eyelids and lips. It is also called *Noli me tangere.*

Luray Cavern (lō'rā), a remarkable cavern in the State of Virginia, in the Blue Ridge Mountains, near the village of Luray. It contains many chambers, some of them of striking aspect, and is exceeding rich in stalactite formations. Pop. of Luray village, 1147.

Lurcher (lur'chēr), a dog that lies in wait for game, as hares, rabbits, partridges, etc., drives them into nets, runs them down, or seizes them. This species of dog is said to be descended from the shepherd's dog and the greyhound, and is more used by poachers than sportsmen.

Lurgan (lur'gan), a market town of Ireland, in the County of Armagh and province of Ulster, 20 miles southwest of Belfast. It contains a handsome Episcopal church, a Roman Catholic church, and several other places of worship; a nunnery, a town hall, courthouse, mechanics' institute, tobacco factory, breweries, linen factories, etc. Pop. 11,782.

Luristan (lō-ris-tān'), a mountainous province of Western Persia, with an area of about 20,000 sq. miles. It is named after the Luri, a race divided into many tribes, all migratory and warlike. The only town is Khorrâmabad, situated in a fruitful plain south of Hamadan.

Lurlei. See *Lorelei.*

Lusatia (lō-sā'she-a, in German *Lausitz*), an extensive region of Germany, now included partly in Prussia, partly in the kingdom of Saxony.

Luscinia (lus-sin'i-a), a genus of insessorial birds of the thrush family (Turdidæ), to which the nightingale (*L. philomela*) belongs.

Lushai Hills (lō'shā), a wild district on the northeast frontier of India, lying along the southern side of the Assam district of Cachar, the east side of the Bengal district of

Chittagong, and extending on the east into Burmah. This territory is occupied by numerous nomadic tribes called Lushais or Kukis, who, since the expedition of 1871, have been submissive to British rule. They bring down to the markets on the plains, ivory, raw cotton, bees'-wax and caoutchouc.

Lusiads. See *Camoens.*

Lusitania (lū-si-tā'ni-a), the ancient name of a large district in the Iberian peninsula, comprising part of Portugal and part of Spain. The inhabitants were named Lusitani.

Lusitania, a British trans-Atlantic liner sunk by a German U-boat off the coast of Ireland on May 7, 1915, with a loss of 1154 lives, of whom 102 were Americans. It was this act and the refusal of the Imperial German Government to disavow it that eventually brought the United States into the European war (*q. v.*).

Lute (lōt), a stringed musical instrument of the guitar kind, formerly very popular in Europe. It consists of four parts, viz., the table or belly with a large sound-hole in the middle; the body, ribbed like a melon, having nine or ten ribs or divisions; the neck, which has nine or ten stops or frets which divide the strings into semitones; and the head or cross, in which are fitted the pegs or screws for tuning the strings, of which there are five or six pairs, each pair tuned in octaves or unisons. The strings are struck by the fingers of the right hand and stopped on the frets by those of the left.

Luther (lō'thèr; Ger. pron. lō'tèr), MARTIN, the great religious teacher of Germany, was born at Eisleben in 1483; and died there in 1546. His father, a miner in humble circumstances, soon after his birth removed with his family to Mansfeld, where young Martin was brought up, piously but with some severity. At the age of fourteen he was sent to school at Magdeburg, whence he was sent in 1499 to Eisenach. At school he made rapid progress in Latin and other studies. In 1501 he entered the University of Erfurt; and in 1505 received the degree of Master. About this time, as he afterwards alleged, he discovered in the library a Latin Bible, and found, to his delight, that it contained more than the excerpts in common use. He was destined by his father to the law, but his more intimate acquaintance with the Bible induced him to turn his attention to the study of divinity, with the view of entering monastic life. Contrary to the wishes of his father he entered the monastery of the Augustines at Erfurt in 1505. In 1507 he was consecrated priest, and in 1508, by the influence of his patron, Staupitz, who was provincial of the order, he was made professor of philosophy in the new University of Wittenberg. In 1510 he visited the court of Pope Leo X at Rome on business connected with the order. Returning to Wittenberg he was made a Doctor of Theology in 1512, and here his profound learning and powerful eloquence drew large audiences. At that time he had

Martin Luther

no controversy with the pope or the church, but the arrival in 1517 of John Tetzel in Wittenberg dispensing indulgences roused the fiery energy of Luther, and caused him to draw up his famous protest in ninety-five propositions, which he nailed to the church door in Wittenberg. In consequence preaching of indulgences ceased, Tetzel fled, and a great religious commotion spread rapidly through Germany. Luther was summoned to Rome to explain his heretical proceedings, but refused to go; nor were the efforts of Cardinal Cajetan able to effect a reconciliation between him and the pope. His dispute with Dr. Eck at Leipzig in 1519, in which he denounced indulgences, and questioned the authority of the pope, was followed in 1520 by a bull of anathema—a document which Luther straightway burned publicly in Wittenberg. This open defiance of Rome required him to vindicate his conduct, which he did in a pamphlet addressed to the Christian nobles of Germany, with the result that many of the mightiest rallied to his aid. When summoned to appear before the German emperor, Charles V. at the Diet of Worms (1521), Luther appeared, acknowledged his writings, made an eloquent defense, but refused to recant. When he retired in triumph from Worms he was met by a friendly troop of soldiers belonging to Frederick the Elector of Saxony, who

conveyed him to the castle of Wartburg, where he lay in concealment for nearly a year. Here he employed his time in translating the New Testament into German, but when he heard that disturbances had been excited in Wittenberg on the question of images, he could no longer bear the restraint of inaction. Returning suddenly, and at great danger to himself, Luther succeeded in quieting the people by means of a wise and patient moderation. In 1524 he laid aside his cowl as a priest of the Roman Catholic Church, and in 1525 married Catharina von Bora, one of nine nuns who had renounced their religious vows under his teaching. The wisdom of this marriage was doubted by his friends, but his home life and the birth of six children, contributed greatly to the happiness of the reformer. From the year 1521 Luther had been busy translating the Bible into German with the aid of Melanchthon and others, and the great task was completed in 1534. This important work, taken in connection with the *Protestant Confession* made at Augsburg in 1530, served to establish the reformer's doctrines in Germany, and closed the important part of his public life. He continued, however, till the end his private work of teaching, preaching and writing. The massive character of the German reformer lay along simple lines, and found its full and direct expression in his work. He lacked the learning of Calvin, and the balanced judgment of Melanchthon, but a vivid practical insight enabled him to mark the path that would lead to the success of his movement for the reforms he sought. Behind all the reformer's zeal he had much lowly human sympathy, humor, tenderness and a love of homely things. This side of his character is most clearly seen in his *Letters* and *Table-Talk*. His German writings were varied and extensive.

Lutherans (lō'ther-anz), the adherents of Luther, a term now applied to one of the great sections into which the Protestant Church on the continent of Europe is divided, the other being known as the Reformed or Calvinists. The doctrinal system of the Lutheran Church is contained in the *Augsburg Confession* (which see), and other documents, including the two catechisms of Luther. The fundamental doctrine is that we are justified before God, not through any merits of our own, but through faith in His Son. The ordinances of Baptism and the Lord's Supper are held by Lutherans to be not mere signs or memorials, but channels of grace. They believe that 'in the Holy Supper there are present with the elements and are received sacramentally and supernaturally the body and blood of the Lord Jesus Christ,' but reject transubstantiation and consubstantiation. They observe the various festivals of the Christian year, and have a liturgical form of worship. The Lutheran is the established religion of Sweden, Norway and Denmark. There are over 76,000,000 Lutherans in the world, and in the United States over 2,000,000 confirmed members.

Luton (lō'tun), a municipal borough of England, County of Bedford, on the river Lea. It has large manufactories of straw hats and bonnets, it being the chi f seat of the straw-plaiting industry in England. Pop. (1911) 50,000.

Lüttringhausen (lüt'ring-hou-zn), a town of Rhenish Prussia, in the government of Düsseldorf, with manufactures of woolens, cottons, etc. Pop. (1905) 11,829.

Lützen (lüt'zn), a small town of Prussian Saxony, in the government of Merseburg. Pop. 3981. Two important battles have been fought in its neighborhood. The first took place on November 16, 1632, between the Swedish army under Gustavus Adolphus, and the imperialists under Wallenstein, the former being victorious. The second was fought May 2, 1813, between the allied Russian and Prussian armies and the French under Napoleon, who maintained his position, though at a loss of 12,000 men, against 10,000 of the allies.

Luxation (luks-a'shun), in surgery, the displacement of a bone, a dislocation.

Luxembourg (lük-sàn-bōr), François Henri de Montmorency-Bouteville, Duke of, Marshal of France, born in 1628; died in 1695. In the war of France against England, Holland, Spain and Germany he won the three great battles of Fleurus (July 1, 1690), Steenkerken (August 3, 1692), and Neerwinden (July 29, 1693).

Luxemburg, an independent grand-duchy of Europe, bounded north and east by Rhenish Prussia, south by France and German Lorraine, and west by Belgium; greatest length, north to south, 55 miles; greatest breadth, 34 miles; area, 998 square miles. It forms part of the plateau of the Ardennes and its drainage belongs almost entirely to the basin of the Moselle. Grain and other crops are raised; cattle and horses are exported; and grapes and other fruits are cultivated on a large scale. Luxemburg has extensive deposits of iron, copper, lead and antimony, but only the iron mines had been exploited up till the beginning of the European war in 1914.

when the Germans occupied the country and proceeded to unearth its hidden resources. The neutrality of Luxemburg was guaranteed by the treaty of 1867, but despite this, the German armies crossed the frontier on August 2, 1914, ignoring the protest of the Grand Duchess, Marie-Adelaide. The army of the grand-duchy consisted of but 430 men, and physical resistance was out of the question. The inhabitants are mostly of German origin, but the official language is French. The speech of the Luxemburgers is a mixture of bad French and still worse German. The people are for the most part Roman Catholics. The law of the land is the Code Napoleon. Luxemburg has changed hands many times. It formed one of the principalities of the Holy Roman Empire of the Germans. In 1354 it was raised to a duchy. It fell to Burgundy in 1443 and came into the hands of Spain. Austria was given control by the Peace of Utrecht in 1713. In 1797 it was ceded to France, and in 1815 it was converted into a grand-duchy and placed under the sovereignty of the King of Holland, though included in the German Zollverein. It was garrisoned by Prussian troops till 1867, when an international conference at London established Luxemburg as a neutral independent state. Pop. 259,899. The capital is Luxemburg. Pop. 20,848.

Luxor (luks'or), a village of Upper Egypt, on the right bank of the Nile, about 2 miles south of Karnak. It contains a splendid ancient temple, and is the headquarters from which visitors set out for the extensive remains of ancient Thebes.

Luynes (lü-ēn), CHARLES D'ALBERT, DUKE DE, favorite and premier of Louis XIII and Constable of France, born in 1578. He caused the exile of the king's mother, and for a short time had absolute control in the government. He died in 1621, without having experienced any visible loss of favor or influence.

Luzerne (lō-zurn'), a borough in Luzerne County, Pennsylvania, 5 miles N. of Wilkes-Barre. It has drill factories, flour and feed mills, etc. Pop. 5426.

Luzon (lō-thon'), formerly a Spanish island, the largest of the Philippines. Its greatest length is about 540 miles; its greatest breadth about 125 miles; area estimated at 57,500 square miles. Two great mountain chains, the Sierra Madre and Cordillera de Caravallos, run north and south, and rise to a height in some cases of more than 7000 feet. They are of volcanic origin, and many disastrous eruptions have taken place. Rivers and lakes are numerous. Vegetation is luxuriant, and the vast forests contain ebony, cedar, and other valuable trees. Luzon also produces abundant crops of rice, sugar-cane, Manila hemp, tobacco, coffee, ginger and pepper. There are few wild animals except the buffalo, which is also domesticated; but oxen, sheep and swine are reared. The population consists of the aboriginal Negritos, and of Malays, Chinese, Spaniards, Americans, etc., the whole amounting to 3,708,350. The capital is Manila. Luzon, with the other Philippine Islands, was transferred to the United States by the peace with Spain of 1898. It is rapidly developing under American rule.

Lycanthropy (lī-kan'thrō-pi; Greek *lykos*, a wolf, and *anthrōpos*, a man), a kind of erratic melancholy or madness in which the patient imagines himself to be a wolf and acts in conformity with his delusion. Great numbers were attacked with this disease in the Jura in 1600. They herded together, and emulated the habits of the wolf.

Lycaonia (lī-ka-ō'ni-a), a small district in Asia Minor, situated between Galatia, Cappadocia and Isauria, of which the capital was Iconium. It was visited by Paul and Barnabas in their earliest missionary journey, as described in Acts, xiv.

Lyceum (lī-sē'um), an academy at Athens in which Aristotle explained his philosophy. In modern times the name of *lyceum* has been given to the schools intended to prepare young men for the universities.

Lych-gate. See *Lich-gate*.

Lychnis (lik'nis), a genus of usually erect, annual, biennial, and perennial herbs, belonging to the nat. order Caryophyllaceæ, or pinks. Some of them bear beautiful flowers. The scarlet lychnis, ragged robin, rose campion and corn-cockle are well known.

Lycia (lish'e-a), an ancient maritime province in the south of Asia Minor, bounded by Caria on the west, Pamphylia on the east, and Pisidia on the north. It was colonized by the Greeks at a very early period, and its historical inhabitants were Greeks, though with a mixture of aboriginal blood.

Lycoperdon (lī-ku-per'don), a genus of fungi, commonly called *puff-balls*. In a young state they are edible.

Lycophron (lik'o-fron), born at Chalcis, in Eubœa, a Grecian poet and grammarian, the author

of several tragedies, who lived at Alexandria, 280 B.C. Of his writings there remains only a dramatic monologue called *Cassandra*.

Lycopodium (lī-ku-pōd'i-um), a genus of plants of the nat. order Lycopodiaceæ (see *Lycopods*). The seeds of *L. clavatum*, or common club-moss, are very minute and resemble an impalpable yellow powder, which burns explosively, and is used for producing theatrical lightning. *L. complanatum*, the ground pine is a trailing evergreen, found commonly growing in woods and shady places throughout the United States.

Lycopodium Selago. a, Leaf; b, Sporangium in the axil of bract; c, Spores—magnified.

Lycopods (lī'ku-pōds), LYCOPODIACEÆ, the club-moss tribe; a nat. order of vascular acrogens, chiefly inhabiting boggy heaths, moors and woods. They are intermediate in their general appearance between the mosses and the ferns, and are in some respects allied to the Coniferæ. The lycopods occur in all parts of the globe, but grow most luxuriantly in tropical or mild climates. In the carboniferous era they attained a very large size, rivaling trees in their height and the thickness of their stems, as in the case of the Lepidodendron.

Lycurgus (lī-kur'gus), the great legislator of the Lacedæmonians, was the son of Eunomus, king of Sparta. His history commences with the year 898 B.C., when he might have usurped the throne on the death of his brother, but preferring to guard the kingdom for the unborn child of the latter, he devoted himself to the study of legislation. On his nephew becoming of age, Lycurgus traveled into Crete, Egypt and Asia, and thus prepared himself to give Sparta the laws which have rendered his name immortal. His object was to regulate the manners as well as the government, and to form a warrior nation, in which no private interest should prevail over the public good. It is said that Lycurgus persuaded the Spartans to swear that they would observe these laws till his return from another journey, and that he then departed, and they never heard of him more. One account states that he starved himself to death, but it is more probable that he retired to private life, and died naturally, as Lucian records, at the age of eighty-five.

Lyddite, a high explosive, its name derived from Lydde in Kent, Eng., where it was first made. It is chemically Picric acid ($C_6 H_2 (N O_2)_3 OH$) obtained by the reaction of carbolic and nitric acids, and forming the basis of most of the high explosives now in use. Lyddite is a crystalline solid, bright yellow in color and bitter in taste. It is a stable compound under changes in temperature, is difficult to detonate and can be melted and poured into shells. It yields suffocating fumes in bursting and is supposed to kill by shock or suffocation. It was extensively used in the Boer War.

Lydia (lid'i-a), in ancient geography, a large and fertile country of Asia Minor, divided from Persia by the river Halys (now Kizil Irmak). It attained its highest prosperity under the Mermnadæ dynasty, beginning with the half mythological Gyges (716 B.C.), and ending with Crœsus (546 B.C.), who was conquered by the Persians under Cyrus. The Lydians are credited with the invention of certain musical instruments, the art of dyeing wool, also the art of smelting and working ore. Sardis was the capital.

Lye (lī), water impregnated with alkaline salt imbibed from the ashes of wood, or any solution of an alkali used for cleaning purposes, as for types after printing, ink-rollers, for making soap, neutralizing acids, etc.

Lyell (lē'el), SIR CHARLES, geologist, born at Kinnordy, Forfarshire,

Sir Charles Lyell.

in 1797; died in London in 1875. He was educated at Oxford, began to study law, but afterwards resolved to devote

his time and fortune to geological research. For this purpose he visited the continent of Europe and the United States. His first important work was the *Principles of Geology* (1830-33), in which he demonstrated that the geological development of the earth was the result of ordinary causes, not of phenomenal paroxysms. A portion of this book afterwards formed the basis of the *Elements of Geology*. Another important work was the *Antiquity of Man* (1863), in which he summarized the evidence in favor of the theory that the race of man was much older than was currently believed. Lyell was knighted in 1848, and made a baronet in 1864. His *Life and Letters* were published in 1881.

Lyly, or LILLY, JOHN. See *Lilly*.

Lyme-grass (lim), the popular name of certain grasses. One species, *Elymus arenarius*, is a native of Britain. They are all coarse grasses.

Lyme Regis, a municipal borough and seaport of England, in Dorsetshire, 22 miles west of Dorchester, intersected by the Lyme. Pop. (1911) 2772.

Lymington (lim'ing-tun), a seaport and watering place of England, in the county of Hants, at the mouth of the Boldre, 12 miles southwest of Southampton. Pop. 4165.

Lymph (limf), in physiology, the fluid resulting primarily from the assimilation of food, and also obtained from the blood and tissues, and which is contained within a system of vessels called *lymphatics* and *lacteals*. The clearest and simplest view of the lymphatic system is to consider these vessels as the media through which matters are absorbed from the alimentary canal on the one hand, and from the blood and tissues on the other. The matters so absorbed are elaborated and converted in the *lymphatic glands* into *lymph*, a fluid which presents the essential features of the more highly elaborated blood, and which is ultimately poured into the blood, mainly through the *thoracic duct*. Through this system the continual loss which the blood and body suffer is made good. The lymph as it exists in the lymphatic vessels is a colorless, transparent fluid, destitute of smell. The lymphatic glands are highly important structures, for it is only after passing through them that the lymph is fully elaborated and ready to enter the blood. Their average size is that of a small almond, and they are generally arranged in groups. As distinguished from the lymphatics the lacteals are the vessels by which the chyle is absorbed from the small intestine and elaborated in the lymphatic glands of the mesentery to be afterwards poured into the thoracic duct. This duct pours its contents into a large vein at the root of the neck. Lymphatic vessels and glands are numerous throughout the body, especially in the subcutaneous tissue, where they form a veritable, highly elaborated, ramified network of fine channels and spaces, and are subject to special diseases.

Lynchburg (linch'burg), a city of Campbell county, Virginia, on James River, 146 miles by rail west of Richmond. It is a large tobacco market; and is an important jobbing center, and has varied industries, including large cast-iron pipe foundry; flour mills and manufactures of plows, cotton, shoes, etc. The Randolph-Macon Woman's College is located here. Pop. 35,000.

Lynch-law, the practice of punishing men for crimes or offences by private unauthorized persons without a legal trial. The origin of the phrase, used chiefly in America, has been variously accounted for, but it is evidently derived from some person named Lynch, who adopted a rough and ready mode of punishing offenders. The system has grown in use until now it is a serious evil and one difficult to eradicate.

Lyndhurst (lind'hurst), JOHN SINGLETON COPLEY, BARON, an eminent lawyer and statesman, was born of Irish parentage at Boston, United States, in 1772, and died in 1863. Intended by his father, J. S. Copley, the artist, to be a painter, he studied for some time under Reynolds and Barry, then entered the University of Cambridge in 1791, took his M.A. degree in 1797, became a fellow of Trinity College, and was called to the bar at Lincoln's Inn in 1804. In 1817 he ably defended Watson and Thistlewood for high treason, was appointed chief-justice for Chester, and in 1818 entered Parliament. In 1819 he became solicitor-general in the Liverpool administration, in 1824 attorney-general, and in 1826 master of the rolls. He was raised to the peerage as Baron Lyndhurst, and became lord-chancellor in 1827, a post he retained till 1830. During the ministry of Earl Grey (1830-34) he held the position of chief baron of the exchequer. He was a formidable opponent of the reform bill. He was again chancellor in 1834, and a third time when the Conservatives returned to power in 1841. His eloquence was much appreciated by the Tory party, especially in the House of Lords, where he continued to take an

interest in foreign politics down to the year 1859, when he vigorously attacked the policy of Napoleon III.

Lyndsay. See *Lindsay.*

Lynedoch (lin'dok), THOMAS GRAHAM, LORD, a British general, was born at Balgowan, England, in 1750, and died in 1843. Until 1792 he lived as a country gentleman, but when his wife died he entered the army as a volunteer, and greatly distinguished himself at the siege of Toulon. He afterwards took part with Sir John Moore in the expedition to Sweden and the retreat to Coruña; and was engaged in the Walcheren expedition. Being sent to take command of the forces besieged by the French at Cadiz, he gained the victory of Barosa in 1811. He next joined Wellington's army and shared in the Peninsular war, taking part in the battle of Vittoria and the siege of St. Sebastian. In 1814, after the unsuccessful siege of Bergen-op-Zoom, he was created Baron Lynedoch.

Lynn (lin), a city and seaport of Essex county, Massachusetts, on an arm of the Massachusetts Bay, about 10 miles northeast from Boston. The town has some fine public buildings, including the city hall, public library, Odd Fellows' hall, etc. It has a large park, more than 2000 acres in area, known as Lynn Woods, and a famous Shore Drive. Its chief industries are the manufacture of boots and shoes, of which upwards of 15,000,000 pairs are annually made and that of electrical appliances, the value of which amounts to many millions of dollars annually. There is also a leather industry. Pop. 89,336.

Lynn-Regis, or KING'S LYNN, a seaport town of England, County of Norfolk, on the Wash, 38 miles W. N. W. of Norwich. The principal buildings are St. Margaret's, and All Saints' churches, St. Nicholas' chapel, the guildhall, athenæum, custom house, corn exchange, etc. The harbor is commodious, and there are two docks. Shipbuilding is carried on and the trade is considerable. Pop. (1911) 20,205.

Lynx (links), the popular name of several species of feline carnivora, resembling the common cat, but with ears longer and tufted with a pencil of hair, and tail shorter. The lynxes have been long famed for their sharp sight, which character they probably owe to their habit of prowling about at night, and their brilliant eyes. The European lynx is the *Felis lynx*, the Canadian lynx is the *F. canadensis.* In Asia lynxes are tamed for hunting.

Lyon-king-at-(or of-)arms, in Scotland, a heraldic officer who takes his title of Lyon from the armorial bearings of the Scottish kings, the lion rampant. The officers serving under him are heralds, pursuivants and messengers. The jurisdiction given to him empowers him to inspect the arms and ensigns-armorial of all the noblemen and gentlemen in the kingdom, to give proper arms to such as deserve them, and to fine those who use arms which are not matriculated. Called also *Lord Lyon.*

Lyonnais (lē-on-nā), an ancient province of France, of which Lyons was the capital. It now forms the departments of the Rhône, Loire, Haute-Loire and Puy-de-Dôme.

Lyons (lē-on, or lī'unz; French, *Lyon*; Latin, *Lugdunum*), the second city in France, capital of the department of the Rhône, 240 miles S. S. E. of Paris, and 170 miles north of the Mediterranean. The town is built partly on a peninsula between the Saône and the Rhône, and partly on the opposite banks of the rivers on either side. The rivers are crossed by about a score of bridges, and the city is surrounded by eighteen detached forts, which form a circuit of sixteen miles. Parts of the city are old, squalid and unhealthy, but as a whole it has a stately and imposing appearance, and is finely seen from the Fourvières, an eminence on the right bank of the Saône, crowned by the church of Nôtre Dame, where a magnificent view extending to the Alps may be had. Among the chief buildings are the cathedral, mostly of the thirteenth century; the church of St. Martin d'Ainay, with a cupola supported by ancient Roman columns and a crypt believed to be of the ninth century; the church of St. Nizier, a fine example of flamboyant Gothic; the Hôtel de Ville, Palais de Justice, etc. In the archiepiscopal palace, situated near the cathedral, 1000 Protestants were butchered in 1572 as a sequel to St. Bartholomew. The Hôtel de Ville is considered one of the finest edifices of the kind in France. The public library has over 200,000 volumes and is rich in MSS. The Palace des Arts or museum contains a picture-gallery and other collections. The chief educational establishments are a university college, a Catholic college, a lyceum, a normal school, la Martinière, a school of industrial arts, etc. Lyons carries on various industries, but its chief glory is that of being the greatest center of the silk manufacture in the world, giving employment in the town or surrounding neighborhood to 240,000 people. A

great many of the weavers work in their own dwellings, not in factories. There is also a large trade by railway, river and canal. The origin of Lyons cannot be traced. When Cæsar invaded Gaul it had become a place of some importance. Towards the end of the second century it numbered thousands of Christians among its inhabitants. It was sacked by the Huns and Visigoths, and in the eighth century fell for a time into the hands of an army of Saracens from Spain, but recovered its prosperity under Charlemagne, on the dissolution of whose empire it became the capital of the Kingdom of Provence. In 1312, during the reign of Philip the Fair, Lyons was annexed to the crown of France. During the revolution the city suffered severely by the paralysis of its industry, and by the murderous excesses of the emissaries of the Paris Convention, whom the citizens had defied, the chief buildings being destroyed and many of the inhabitants butchered. Pop. (1911) 523,796.

General View of Lyons.

Lyons, Gulf of (in French, *Golfe du Lion*), a bay of the Mediterranean, on the southeastern coast of France. The principal ports on this gulf are Toulon, Marseilles and Cette.

Lyre (lir), one of the most ancient stringed instruments of music, consisting of a body with two horn-like pieces rising from it, and a cross-piece between the horns, from which to the lower part the strings were stretched. It was used by the Egyptians, Assyrians and Greeks. It is said to have had originally only three strings, but the number was afterwards increased to seven, then to eleven, and finally to sixteen. It was played with the *plectrum* or lyre-stick of ivory or polished wood, also with the fingers, and was used chiefly as an accompaniment to the voice. The body of the lyre was hollow, to increase the sound. A musical instrument of similar construction is still to be met with in the hands of the shepherds of Greece and among certain tribes of Africa.

Lyre-bird (*Menura superba*), an insessorial bird of New South Wales, somewhat smaller than a pheasant. The tail of the male is remarkable for the three sorts of feathers that compose it, which by their shape and arrangement resemble the form of an ancient Greek lyre. It has a pleasing song, and is said to be capable of imitating the voices of other birds.

Lyric Poetry (lir'ik), originally, poetry sung to or suited for the lyre; in modern usage, that class of poetry in which are expressed the

poet's own thoughts and feelings, or the emotions attributed to another, as opposed to epic or dramatic poetry, to which action is essential.

Lys (lēs), a river which rises in France, runs through Belgium, and enters the Scheldt at Gheut; length, 100 miles.

Lysander (lī-san'dēr), an ancient Greek general who was appointed to the command of the Spartan fleet off the coasts of Asia Minor in 407 B.C., during the Peloponnesian war. In

Various forms of Egyptian, Assyrian and Greek Lyres.

405 B.C. he defeated and captured the Athenian fleet off Ægospotamos, and thus put an end to the war. He was killed in a battle with the Thebans 395 B.C.

Lysias (lish'e-as), an Athenian orator, born about 458 B.C. He studied philosophy and eloquence at Thurii in Magna Græcia, and was there employed in the government. On the defeat of the Athenians in Sicily he returned to Athens in 412, but was banished by the thirty tyrants. When the city recovered its freedom he returned in 403, and gave instruction in eloquence, also writing speeches for others to deliver. He died in 378. Only about thirty of his numerous orations have been preserved.

Lysimachia (lis-i-mā'ki-a), a genus of herbs, nat. order Primulaceæ. Four species occur in the United States, known by the name of loosestrife, and one (*L. longifolia*) is called Prairie money-wort.

Lysimachus (li-sim'a-kus), a general in the army of Alexander the Great, was born in Macedonia 360 B.C., and at the death of the emperor and the division of the empire he became king of Thrace. During the latter years of his reign he was instigated by his wife to kill his son Agathocles. This murder caused his subjects to rebel, and in the war which followed Lysimachus was defeated and slain at the battle of Corus in B.C. 281.

Lysippus (li-sip'us), a Greek sculptor who flourished in Sicyon about 330 B.C., in the time of Alexander the Great.

Lytham (lith'am), a watering place in Lancashire, England, agreeably situated in a sheltered position on the north shore of the estuary of the Ribble. Pop. (1911) 9464.

Lythraceæ (li-thrā'se-ē), the loosestrife tribe, a nat. order of polypetalous exogens, containing about thirty genera of herbs, trees and shrubs, of various habit, often with square branches; the leaves usually are opposite or whorled, entire, and shortly petiolate; the flowers being often large and showy. Henna and tulipwood belong to the order.

Lythrum (lith'rum), a genus of plants, the type of the order Lythraceæ (which see). *L. salicaria*, purple loosestrife, is a tall and handsome plant.

Lyttelton (lit'l-tun), a seaport in the district of Canterbury, New Zealand, connected with Christchurch—of which it is the port—by a railway 8 miles long. There is a fairly good harbor, improved by a breakwater, etc., a graving dock, and a considerable shipping trade. Pop. (1906) 3941.

Lyttelton, George, Lord, a poet and historian, eldest son of Sir Thomas Lyttelton, baronet, was born in 1709, and died in 1773. He entered Parliament in 1730, and joined the opposition led by Pitt and Pulteney. In 1756 he was raised to the peerage. He was on terms of intimacy with Pope, and the patron of Fielding and Thomson. His *Miscellanies* in prose and verse had once a reputation, but are now forgotten. In his latter years he wrote his *Dialogues of the Dead* and a *History of Henry II.* His son, Thomas, Lord Lyttelton, born in 1744; died in 1779. His early years were remarkable for a promise of ability which was never fulfilled, — his dissipated habits soon estranged him from his father and separated him from his wife. Such, however, was his literary reputation and political status that he was claimed at one time as the writer of the *Junius Letters*. It is said that from a presentiment he predicted his death three days before it occurred, and some have thought he committed suicide.

Lytton (lit'un), Edward George Earle Lytton Bulwer-Lyt-

TON, BARON, youngest son of General Bulwer, of Woodalling, and Elizabeth Barbara Lytton, of Knebworth, was born in 1805; died in 1873. He entered Trinity Hall, Cambridge, was graduated B.A. in 1826, M. A. in 1835, and gained the chancellor's prize medal for his English poem on *Sculpture*. He published poetry at an early age, but first gained reputation by the novels *Pelham* and the *Disowned* (1828), *Devereux* (1829), and *Paul Clifford* (1830). These were followed with the popular romances of *Eugene Aram*, the *Pilgrims of the Rhine*, *The Last Days of Pompeii*, *Rienzi* and *Ernest Maltravers*, with its sequel, *Alice*. In connection with Macready's management at Covent Garden Bulwer-Lytton produced his *Duchess de la Vallière*, which proved a failure, but this was retrieved by the instant success of the *Lady of Lyons*, *Richelieu* and *Money*. When he had thus shown his quick adaptability of talent he returned to novel writing, and published in steady succession—*Night and Morning*, *Zanoni*, *The Last of the Barons*, *Lucretia*, *Harold*, *The Caxtons*, *My Novel*, and *What Will He Do With It?* In 1845 he published a poetical satire called *The New Timon*, in which he attacked Tennyson, who replied more vigorously than had probably been expected. He entered Parliament for St. Ives in 1831, and supported the Reform Bill as a Whig; but he changed his opinions and latterly supported the Conservatives. Under Lord Derby's ministry he was colonial secretary, and in 1866 entered the House of Lords as Baron Lytton. He was elected rector of Glasgow University in 1856. His later literary works were *The Coming Race*, published anonymously (1871), *The Parisians* (1872), and *Kenelm Chillingly* (1873). Among his poetic works were the epic *King Arthur*; the *Lost Tales of Miletus*; *Brutus*, a drama, etc. As an author he is usually known under the name of Bulwer.

Lytton, THE RIGHT HON. EDWARD ROBERT BULWER-LYTTON, EARL OF, G.C.B., son of the novelist and politician, was born in 1831; educated at Harrow and Bonn; entered the diplomatic service in 1849 as attaché at Washington, and successively served in the embassies of Florence, Paris, The Hague, St. Petersburg, Constantinople, Copenhagen and Lisbon. He was appointed Viceroy of India by the government of Mr. Disraeli in 1876, and it was during his administration that the queen was proclaimed Empress of India. This post he resigned in 1880, being then created an earl. He early attained a certain reputation as a poet, under the pen name of *Owen Meredith*; and published *Clytemnestra and other Poems*, *Lucile*, *Tannhäuser, or the Battle of the Bards*, *Fables in Song* and *Glenaveril*, besides prose works. He also published the life and letters of his father. He was appointed ambassador to Paris in 1888. He died in 1891.

M

M is the thirteenth letter and tenth consonant of the English alphabet. It represents a labial and nasal articulation, the compression of the lips being accompanied with the fall of the uvula so as to allow the voice to form a humming sound through the nose, which constitutes the difference between this letter and *b*.

Maartens, MAARTEN, pen name of J. M. M. VAN DER POORTIN SCHWARTZ, a Dutch author, born at Amsterdam in 1858. He spent part of his boyhood in England and writes in English. Some of his best known novels being *The Sin of Joost Avelingh*, *God's Fool*, *The Greater Glory* and *My Lady Nobody*.

Maas. See *Meuse*.

Maastricht. See *Maestricht*.

Mab, a mythical personage often represented as queen of the fairies.

Mabie (mā'bē), HAMILTON WRIGHT, American author, was born at Cold Spring, N. Y., in 1846 and graduated from Williams College in 1867, and from the Law School of Columbia University in 1869. He contributed a number of essays to current periodicals, and in 1879 joined the editorial staff of the *Christian Union*, afterward the *Outlook*, of which he became associate editor with Lyman Abbott. He acquired much fame as a lecturer on books, ethics and religion. Among his published books are: *Norse Stories Retold from the Eddas*, *Nature in New England*, *My Study Fire*, *Short Studies in Literature*, *Under the Trees and Elsewhere*, *Essays in Literary Interpretation*, *Nature and Culture*, etc.

Macalester College, a co-educational institution of learning in St. Paul, Minn., founded in 1884. In 1917 there were 350 students enrolled; the faculty numbered 40. The buildings and grounds are valued at $380,000. The college is nonsectarian in its teachings, but is under Presbyterian control.

Macao (ma-kä'o, or ma-kou'), a seaport town and Portuguese settlement in China, on a peninsula at the mouth of the Canton River, about 40 miles from Hong-Kong, considered the healthiest residence in Southeast Asia. The settlement has an area of about 21 sq. miles, and its principal export is tea. Its commerce has greatly declined since the rise of Hong-Kong and the Chinese treaty ports. It was in 1575 that the Portuguese first obtained permission to form a settlement and to trade at Macao, and in 1844 it was declared a free port. Pop. 78,627.

Macaroni, MACCARONI (mak-a-rō'ni), a preparation of wheaten flour, used as food, usually simply boiled and served up with grated cheese, or in soups, etc. Macaroni is generally made in tubular pieces resembling a long pipe-stalk, by pressing it through holes in a metal plate. *Vermicelli* is a similar preparation, but is more thread-like. Macaroni is a wholesome food, made best in the neighborhood of Naples, and considered a national dish of the Italians.—Macaroni was used as a term of contempt for a coxcomb or swaggerer about 1770-75.

Macaronic Poems (mak-a-ron'ik), a kind of facetious Latin poems, in which are interspersed words from other languages, with Latin inflections. They were first written (at least with the above designation) by Teofilo Folengi, 1484-1544, and were introduced into England in the reign of Henry VII. Drummond of Hawthornden is credited with a macaronic poem, *Polemo-Middinia*, published in 1691. There is good reason, however, to believe that it is later than Drummond's time, and that it is the work of Dr. Pitcairne (1652-1713).

Macaroon (mak'a-rōn), a favorite kind of biscuit, made of the meat of sweet almonds instead of ordinary flour.

Macassar (ma-kas'ar), a town on the island of Celebes, capital of the Dutch government of Celebes. It has an excellent harbor, and carries on a considerable trade in rice, spices, ebony, sandal-wood, etc. Pop. 17,825. See *Celebes*.

Macassar, STRAITS OF, between Celebes and Borneo, about 350 miles long, and from 110 to 140 wide, except at the north entrance, where it is contracted to 50 miles. Navigation is difficult because of the numerous shoals and small islands.

Macaulay (mȧ-kȧ'le), THOMAS BABINGTON, LORD, historian, essayist and politician, was born in 1800 at Rothley Temple, Leicestershire, and died at Kensington in 1859. His father, Zachary Macaulay, who had been a West Indian merchant, was a well-known philanthropist, while his mother was Selina Mills, the daughter of a Bristol Quaker. Their son Thomas was severely educated

Lord Macaulay.

in the rigid Calvinism of what was known as the 'Clapham sect.' In 1818 he entered Trinity College, Cambridge, where he obtained the Chancellor's medal for a poem on *Pompeii*, and a second time for a poem on *Evening;* received a fellowship, and took his M.A. degree in 1825. Before this he began to contribute to *Knight's Quarterly Magazine*, in which appeared his poems of the *Armada*, *Ivry*, and the *Battle of the League;* and in 1825 he inaugurated his brilliant career in the *Edinburgh Review* by his article on Milton. He was called to the bar at Lincoln's Inn in 1826. He entered parliament in 1830 as member for Calne, and made his first speech in support of freedom for the Jews in England. He also spoke in favor of the antislavery legislation, and delivered several speeches in favor of the Reform Bill of 1832. He afterwards became member for Leeds, but resigned his seat and proceeded to Calcutta as legal member of the supreme council of India, in which position he prepared a new penal code that was not adopted because of its liberal dealing with the native races. Returning from India he was elected a member of parliament for Edinburgh, was made secretary of war in the Melbourne ministry (1839-41); and when the Whigs returned to power in 1846 he was appointed paymaster of the forces. At the election of the same year his Edinburgh constituency refused to reëlect him, but their attitude was reversed in 1852, he being returned, although he had not presented himself as a candidate. During his political career Macaulay had continued his literary labors. In 1842 he published his *Lays of Ancient Rome;* and in 1848 appeared the first two of the five volumes of his *History of England*, which covers the period between the accession of James II and the death of William III. This brilliant rhetorical exposition, although touched with partisanship and with a tendency to paradox, has attained the position of an English classic. He was created a peer in 1857, and at his death he was buried in Westminster Abbey. The *Life and Letters of Macaulay* has been published by his nephew, Sir George Otto Trevelyan (1876).

Macaw (ma-kȧ'), a genus (*Macrocercus*) of beautiful birds of the parrot tribe. The macaws are magnificent birds, distinguished by having their cheeks destitute of feathers, and their tail-feathers long (hence their generic name). They are all natives of the tropical regions of South America. The largest and most splendid in regard to color is the great scarlet or red and blue macaw (*M. Aracanga* or *macao*). The great green macaw (*M. militaris*) and the blue-and-yellow macaw (*M. ararauna*) are somewhat smaller.

Red and Blue Macaw. (*Macrocercus Aracanga.*)

Macaw-tree, the name given to several species of trees of the genus *Acrocomia*, natives of tropical America, as *A. fusiformis* and *A. sclerocarpa*, the fruit of which last yields an oil of a yellowish color of the consistence of butter, with a sweetish taste and a odor of violets, used by the natives of the West Indies as an emollient in painful

affections of the joints, and largely imported into Britain, where it is sometimes sold as palm-oil, to be used in the manufacture of toilet soaps.

Maça'yo. See *Maccio.*

Macbeth (mak-beth'), MACBEDA, or MACBETHAD, son of Finnlaech, a king of Scotland who reigned from 1040 to 1057. The facts of his life, so far as they are known, are these: During the reign of Duncan he was 'mormaer' of Moray by inheritance, and by his marriage with Gruoch, granddaughter of Kenneth IV. This Duncan, in his attempt to subdue the independent chiefs of the north, was slain by Macbeth at 'Bothgowan,' which is supposed to be near Elgin. By this means Macbeth became king, and, according to all accounts, his reign was fairly successful. In 1050 he is said to have gone on a pilgrimage to Rome. At the death of their father the sons of Duncan had taken refuge with their Uncle Siward, earl of Northumberland, and with his aid they invaded Scotland in 1054; a battle was fought at Dunsinane, but it was not until 1057 that Macbeth was finally defeated and slain at Lumphanan in Aberdeen. The legends which gradually gathered round the name of Macbeth were collected by John of Fordun and Hector Boece, and reproduced by Holinshed in his Chronicle, and there found, as is supposed, by Shakespere, who has made such splendid use of them.

Maccabees (mak'a-bēz), a dynasty of ruling Jewish priests of whom the first who came into prominence was Mattathias. During the persecutions of Antiochus Epiphanes he slew a Jew who came to the altar to renounce his faith, and then fled to the mountains with his five sons—Johannes, Simon, Judas, Eleazar and Jonathan. Being joined by numerous patriotic Jews they were able to make successful resistance to the national foe and reëstablish the ancient religion. When Mattathias died (166 B.C.) his sons Judas and Jonathan became successively leaders of the national movement. The last remaining member of the family was Simon, who now carried forward the national cause to a triumphant issue, reduced 'the tower' of Jerusalem, and established the power of the new state. Under his rule trade and agriculture flourished, until (in 135 B.C.) he was treacherously murdered by Ptolemy, his own son-in-law.

Maccabees, BOOKS OF, treat of the Jewish history under the Maccabean princes; they are five in number, the first two of which are included in the English Apocrypha, and are accounted canonical by the Roman and Greek churches.

MacCarthy (ma-kar'thi), DENIS FLORENCE, poet, born in Ireland about 1820; died in 1882. His ballads, poems and lyrics were published in 1850. He translated six of Calderon's dramas; wrote a volume on *Shelley's Early Life* in 1872, and contributed an ode to the Moore Centenary in 1879. A collected edition of his poems was published in 1884.

MacCarthy, JUSTIN, novelist, historian and politician, was born at Cork in 1830; became connected with the Liverpool press in 1853; joined the staff of the *Morning Star* in 1860, and ultimately became its chief editor in 1864. He afterwards traveled for three years in the United States; contributed to various English and American magazines, and was connected with the *Daily News*, 1870-85. His historical writings, which are much esteemed, include *History of Our Times*, 1837-80, *History of the Four Georges*, etc. In addition he wrote a number of highly popular novels. He represented Longford in parliament from 1879 as a Home Ruler. He died in 1912.—His son, JUSTIN HUNTLEY MACCARTHY (born in 1859), is an M.P. of the same party, and is favorably known in literature, his works including *England Under Gladstone, Ireland Since the Union, The French Revolution, etc.*

Macchiavelli. See *Machiavelli.*

MacClellan (ma-klel'an), GEORGE BRINTON, an American general, born at Philadelphia in 1826; died in 1885. He was trained at the West Point Military School; served in the Mexican war; joined the Red River expedition as engineer; and in 1855 was appointed to the commission which reported on the condition of European armies, and watched the military operations during the Crimean war. At the outbreak of the Civil war in the States he was victorious in West Virginia, superseded McDowell after the first battle of Bull Run, and became commander-in-chief on November 1, 1861. In this capacity he organized the raw levies of the North and advanced against Richmond the following spring, but was relieved from his supreme command by President Lincoln in 1862, remaining in command of the army before Richmond. Here he was defeated in a series of battles lasting seven days, and was forced to retire from his lines in front of Richmond. During the second battle of Bull Run, he was recalled to

Washington, and when Lee advanced into Maryland, MacClellan pursued and fought the battles of South Mountain and Antietam (September 14-17, 1862). The result was the withdrawal of Lee across the Potomac, MacClellan following so deliberately that the authorities at Washington grew dissatisfied with his apparent slackness in following the enemy, and he was relieved from his command and retired from the army. In 1864 he was nominated for the presidency, but was overwhelmingly defeated by Abraham Lincoln.

Macclesfield (mak'lz-fēld), a town of England, Cheshire, 17½ miles south by east of Manchester, on the Bollin. It is pleasantly situated, and the principal buildings are the church of St. Michael, an ancient structure, founded by Eleanor, queen of Edward I, in 1278; St. Peter's and St. Paul's; a spacious town-hall, subscription library, theater, etc. The staple manufacture is silk, and the cotton manufacture has also made some progress. In the vicinity are extensive coal-pits and stone and slate quarries. Pop. (1911) 34,804.

MacClintock (ma-klin'tok), Sir Francis Leopold, born at Dundalk in 1819; entered the navy in 1831; became a lieutenant in 1845; and in 1848 joined the expedition sent out by the British government in search of Sir John Franklin, the Arctic explorer. In 1852 he was instrumental in rescuing MacClure and his companions. In 1857, as commander of the Fox, a vessel equipped by Lady Franklin, he discovered evidence of the death of Franklin. He was knighted in 1859 and made vice-admiral in 1877. Died in 1907.

MacClure (ma-klur'), Sir Robert John Le Mesurier, born in 1807; died in 1873. He entered the navy in 1824; joined an Arctic expedition in 1836; accompanied Sir John Ross into the same region in 1848; and himself took command of an Arctic expedition in 1850. He penetrated as far north as Melville Sound, and was the first to make the northwest passage between the Atlantic and Pacific, this being done partly by sledging over the ice, his ship being abandoned.

MacCosh (ma-kosh'), James, was born in Ayrshire in 1811; became a minister of the Church of Scotland first at Arbroath, then at Brechin; joined the Free Church after the disruption movement; was appointed professor of logic and metaphysics in Queen's College, Belfast, 1851; was president of Princeton College, New Jersey, from 1868 to 1888, when he resigned. He wrote various works on philosophy and psychology, among them the *History of Scottish Philosophy* (1874); the *Development Hypothesis* (1876); *The Emotions* (1880); *Psychology* (1886) etc. He died in 1894.

MacCulloch (ma-kul'lo), Horatio, one of the most distinguished of Scottish landscape painters, was born in Glasgow in 1806; died near Edinburgh in 1867. His paintings are nearly all of Scotch scenery. Among them are the *Cuchulin Mountains*, *A Dream of the Highlands*, *Highland Loch*, and *Mist on the Mountains*.

MacCulloch, Hugh, financier, born at Kennebunk, Maine, in 1808; died in 1895. He was made comptroller of the currency in 1863 and secretary of the treasury in 1865, and was remarkably successful in raising funds for the expenses of the Civil war. He was secretary of the treasury again, 1884-85. He wrote *Men and Measures of Half a Century*.

MacCulloch, John, a British mineralogist, born in 1773; died in 1835. Educated at Edinburgh for the medical profession, he became assistant surgeon in the army, and ultimately practiced privately at Blackheath. He undertook a government mineralogical and geological survey of Scotland in 1826, a task which was completed in 1832. As the result of his labor he published *A Description of the Western Islands of Scotland; A Geological Classification of Rocks*, etc.

MacCulloch, John Ramsay, a political economist and statistician, born in Wigtonshire in 1789; died in London in 1864. He edited the *Scotsman* newspaper and contributed largely to the *Edinburgh Review*. In 1828 he was appointed professor of political economy in London University, became comptroller of the stationery office in 1838, and retired on a pension of £200 a year. Among his numerous works are *The Principles of Political Economy* (1825); *Historical Sketch of the Bank of England* (1831); *Dictionary of Commerce* (1832); *Geographical Dictionary* (1841), and *The Literature of Political Economy* (1845).

Macdonald (mak-don'ald), Flora, born on South Uist, one of the Hebrides, in 1720; died in 1790. She became celebrated in 1746 for the part she took in assisting Prince Edward Charles to escape the government pursuit, when she conveyed him from South Uist to Skye, disguised and in an open boat. For this cause she was imprisoned for several months in London and then

released. She married, settled in America, but afterwards returned to and died in Skye.

Macdonald, Sir John Alexander, a Canadian statesman, was born in Scotland in 1815. Being taken to Canada, he was educated at Kingston; admitted to the bar in 1835; entered parliament for Kingston in 1844; and became successively a member of the executive council, receiver-general, commissioner of crown lands, and attorney-general. He became premier in 1869, a position which he held until 1873 when he resigned on account of the Pacific Railway charges, but resumed the office in 1878, and retained it until his death, June 6, 1891. He was an active promoter of the Canadian Pacific Railway and the Canadian confederation movement, and was a recognised leader of conservative party.

MacDonald, George, novelist and poet, was born at Huntly, Scotland, in 1824; educated at King's College, Aberdeen; became an Independent minister, but soon adopted literature as a profession. Among his numerous novels are *David Elginbrod*, *Robert Falconer*, *Malcolm*, *Castle Warlock*, etc. He died in 1905.

MacDowell, Edward Alexander, American composer and pianist, born in New York City in 1861; died in 1908. He studied at the Paris conservatory and at Frankfort. For eight years he was professor of music at Columbia University. A complete nervous break-down in 1905 put an end to all work. His compositions include sonatas, two orchestral suites, and a number of songs and pianoforte pieces.

Mace (mās), a weapon of war in use in Europe as late as the sixteenth century. It consisted of a staff about 5 feet long, with a heavy metal head, which assumed a variety of forms, but was frequently in the form of a spiked ball. Another kind of mace is a sort of heavy ornamental staff used as an emblem of authority in universities, courts of law, parliament, etc.

Mace, a spice, the dried aril or covering of the seed of the nutmeg (*Myristica fragrans*). It is aromatic and is used in cooking and pickling.

Macedo (ma'sē-dō), Joaquim Manual, Brazilian poet and novelist, born in 1820; died in 1882. The Brazilians regard him as their best poet.

Macedonia (mas-e-dō'ni-a), in ancient geography, a territory lying to the north of Greece, which first became powerful under King Philip, the father of Alexander the Great, and conqueror of Greece. Alexander the Great added immensely to the empire of Macedonia, and made what had only been a petty province mistress of half the world. After his death the empire was divided; dominion over Greece was lost; and the result of the battles of Cynoscephalæ (197 B.C.) and Pydna (168 B.C.) was to reduce the ancient kingdom to a Roman province. Macedonia long formed a part of Turkey in Europe, being inhabited by peoples of varied race. It has now disappeared from the map of Europe.

Maceió (mā-sā'i-o), a Brazilian seaport, capital of province Alagoas, on the Atlantic, lat. 9° 39′ S. Chief exports: cotton, rum, and sugar. Pop. 1908 est. 33,000.

Maceo (ma'se-ō), Antonio, a Cuban patriot, born at Santiago de Cuba in 1843. He was a prominent leader in the rebellion of 1868-78, was banished, but returned again in 1895 and took an active part in the insurrection of that year. He was killed in a skirmish in 1896.—His brother, José, born in 1846, was equally prominent in both the insurrections named, and was also killed in battle in 1896.

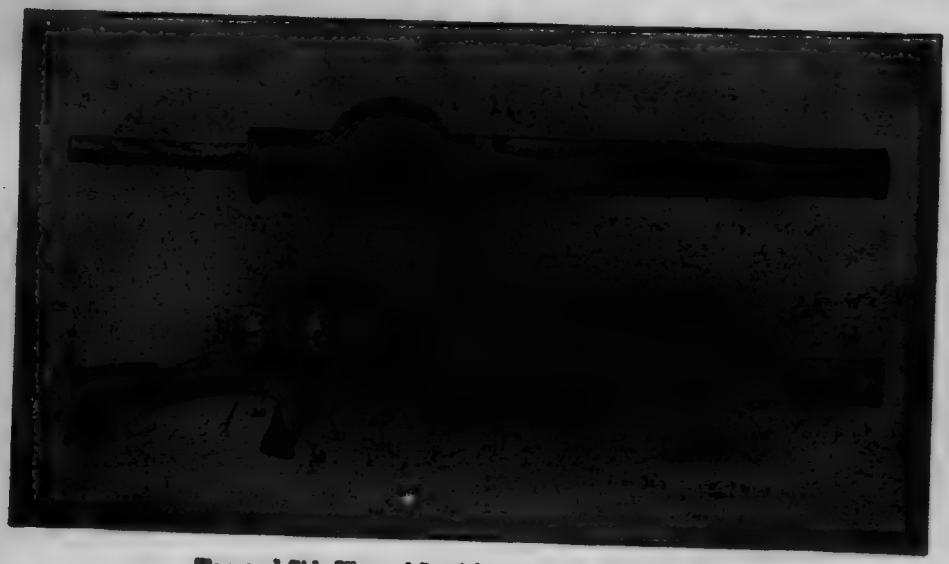
Macerata (mā-chā-rā'tā), a town in Italy, capital of the province of the same name, on a lofty eminence midway between the Apennines and the sea, 21 miles south of Ancona. The principal buildings are the cathedral, provincial palace and theater, all situated in a large public square, various churches and convents, a college, museum, etc. Pop. 22,473.—The province, bounded north by Ancona, west by Umbria, south by Ascoli, and east by the Adriatic, has a area of 1056 square miles, produces maize, corn, fruit and hemp, and rears great numbers of sheep and cattle. Pop. 259,429.

Macfarren (mak-far'en), Sir George Alexander, musical composer, born at London in 1813; died in 1887. He was educated at the Royal Academy of Music; became a member of the board of the academy, and ultimately chairman and principal; was elected professor of music, Cambridge University (1875); and was knighted by the queen in 1883. His chief operas are *The Devil's Opera* (1838), *Don Quixote* (1846), and *Robin Hood* (1860). He also essayed the cantata in *Lenore* (1852), and *The Lady of the Lake* (1870); while his oratorios are *St. John the Baptist* (1873), *The Resurrection* (1876), *Joseph* (1877), and *King David* (1883). He also wrote several musical treatises.

Macgillicuddy Reeks (ma-gil'i-kud-i), a

picturesque mountain range of Ireland, in the county of Kerry, extending for 13½ miles from the lakes of Killarney on the east to Lough Carra on the west. It is the loftiest mountain range in Ireland; Carrantual, the highest peak, rises 3404 feet above sea-level

Machette (mȧ-chȧ'tȧ), an implement of steel with a wooden handle, originally manufactured for the cutting of sugar-cane, but adopted by the Cubans as a weapon in their encounters with the Spanish troops. The blade is about two feet in length, slightly curved, resembling a pruning-hook on a larger scale. Being exceedingly sharp and heavy in proportion to its size, it formed a terrible weapon.



Top and Side View of Lewis' Automatic Machine Gun.

Machiavelli (mȧk-yȧ-vel'lē), NICCOLO, a distinguished Italian statesman and historian, born at Florence in 1469; died in 1527. He became prominent in public affairs in 1498, when he was appointed secretary to the Ten at Florence. For more than fourteen years he guided the destinies of the Florentine Republic, undertook embassies, concluded treaties, and jealously conserved the rights and liberties of his native city. When the Medici returned to power in 1512 by aid of Pope Julius II, Machiavelli was deprived of his office, and imprisoned for his supposed complicity in a plot to overturn the new authority; but being released after a time he retired to his country house of San Casciano. Here he devoted himself to literary labor, the chief results of which are found in his *History of Florence*, embracing the period between 1215 and 1492; *Discourses on Livy; The Prince*, by which he is best known; a military treatise entitled *Dell' Arte della Guerra*; and the comedies of *La Mandragola* and *La Clizia*. The name of Machiavelli was for long synonymous with all that is tortuous and treacherous in state affairs, due to the advice he gave to sovereigns in *The Prince*, but he did no more than advocate the political measures common in his day.

Machine Gun (ma-shēn'), the type of weapon known as the machine gun is an important and extensively used factor in modern warfare. By this term is meant a gun using small arms ammunition, the loading, firing and extraction of the empty shell being done by machinery. There are two main types, those operated by hand and the so-called automatic machine guns in which a small portion of the gas generated by the firing of each cartridge, or the recoil from the firing is used to operate the mechanism.

In the European war, which began in 1914, the Lewis air-cooled machine rifle, the improved Vickers light automatic rifle-calibered gun, the Maxim automatic, and other types of rapid-fire guns were extensively employed.

The United States, on entering the war, was handicapped by lack of machine guns,

the ordnance departments being in the midst of experiments with several different makes then on the market. Dropping these experiments, the army experts set about devising a new weapon and the Browning light and heavy machine guns are the result. In their first public tests on February 27, 1918, they were pronounced not only the simplest but the most deadly and the most serviceable of any machine gun in the world. The light Browning is practically an automatic rifle weighing but 15 pounds and shooting the regulation army rifle cartridge carried in detachable magazines containing either 20 or 40 cartridges. This weapon may be used as an automatic or semi-automatic. That is to say, it can be made to fire continuously until the magazine is emptied simply by holding back the trigger or it can be employed as a self-loading and self-cocking rifle, in which case the rifleman pulls the trigger for each shot. This change is made by moving a conveniently located lever. This gun is of the air-cooled gas operated design, in which the mechanism for ejecting the empty shell, inserting and firing the next cartridge, is accomplished by the gas pressure created by the explosion, a small portion of which is taken off to operate the gun. As an automatic, it will fire 20 shots in 2½ seconds. It may be fired either from the shoulder like an ordinary rifle or from the hip.

THE BROWNING MACHINE GUN

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The Browning heavy machine gun is of the water-cooled, belt-feed design and is operated by means of the power created by the recoil action. This gun is mounted on a tripod which permits it to be fired at almost any angle. The cartridge belts contain 250 cartridges each and are carried in boxes on either side of the gun. The ammunition is the same as that used in the United States rifle, model of 1918, the Springfield rifle, and in the light Browning gun. It is claimed that this heavy duty machine gun, in simplicity, convenience and power, is the superior of any in the world.

THE BROWNING AUTOMATIC RIFLE

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Mackay JOHN W., capitalist, was born at Dublin, Ireland, in

1881. In 1860, after a miner's life in California, he went to Nevada, and in 1872 he was one of the discoverers of the Bonanza mines, of which he owned two-fifths. In 1884, in partnership with James Gordon Bennett, he laid two cables across the Atlantic. He died in 1902.

Mackaye (ma-ki'), PERCY, an American dramatist and poet, born in New York, March 16, 1875. He graduated at Harvard, studied further at the University of Leipzig, traveled, and taught. Since 1904 he has been engaged almost wholly in dramatic work, and his plays more than those of any other American dramatist of the time are poetic in spirit. His plays include *The Canterbury Pilgrims* (1903), *Fenris the Wolf* (1905), *Sanctuary; A Bird Masque* (1913), *A Saint Louis; A Civic Masque* (1914), *A Thousand Years Ago* (1914), and he has also published poems and edited the work of Chaucer.

Mackensen (mak'en-sen), AUGUST VON, German Field-Marshal, was born in Saxony in 1849. He entered the Hussars in 1869 and was gradually advanced in rank from lieutenant to colonel. He was aide-de-camp in attendance on the Kaiser in 1898, was raised to the nobility in 1899, made major-general in 1900, lieutenant-general in 1903 and in 1908 commanding-general of the Eleventh Army Corps. In 1914 he was commander-in-chief on the Central Eastern front, and led the drive through Poland, past Warsaw and to Dvinsk. He was made Field Marshal in 1915, and in 1916 was chief in command in the campaign by which Rumania was overrun.

Mackenzie (ma-ken'zē), SIR ALEXANDER, a Canadian explorer, born at Inverness, Scotland, in 1755; died in 1820. In the employment of the Northwest Fur Company he explored the great river named after him from the western end of Great Slave Lake to the Arctic Ocean (1789). He made another expedition to the western coast (1792), and was the first white man to cross the Rocky Mountains and reach the Pacific coast. He returned to Britain in 1801, and was knighted.

Mackenzie, ALEXANDER, a Canadian statesman, born in Logierait, Perthshire, Scotland, in 1822. Originally a stone mason, he emigrated to Kingston, Canada, in 1842, and began business as a builder and contractor. In 1852 he was editor of a Liberal newspaper, and he entered parliament in 1861, becoming leader of the Liberal party in 1873. On the resignation of Sir John Macdonald that same year he became premier, and retained office with much success till 1878. He more than once declined the honor of knighthood. He died in 1892.

Mackenzie, ALEXANDER CAMPBELL, composer, born at Edinburgh in 1847; received his musical education partly in Germany. He became principal of the Royal Academy of Music in 1888. He is the author of the oratorio, *The Rose of Sharon* (1884), the operas *Colombe* (1884), and *The Troubadour* (1886), the cantata of the *Story of Sayid* (1886), *The Dream of Jubal* (1889), etc.

Mackenzie, SIR MORRELL, born at Leytonstone, Essex, in 1837; educated at London Medical College, Paris and Vienna; obtained the Jackson prize for diseases of the larynx; became physician to the London Hospital, and lecturer on diseases of the throat. In 1887-88 he was associated with the specialists of Berlin and Vienna in the treatment of the laryngeal disease of the Emperor Frederick of Germany. He was the author of a treatise on *Diseases of the Throat and Nose* and several other works. He died in 1892.

Mackenzie, ROBERT SHELTON, writer and journalist, born in County Limerick, Ireland, in 1809; died in 1881. After doing editorial work on the *Liverpool Journal* and other papers, he settled in the United States in 1852, and became the literary and foreign editor of the Philadelphia *Press*. He wrote *Lays of Palestine; Tressilian, or the Story Tellers; Life of Dickens* and other works.

Mackenzie River, a large river in the Northwest Territories of Canada, which flows out of Great Slave Lake, first west, then north, finally northwest; and after a course of about 1200 miles falls into the Arctic Ocean by numerous mouths. Its principal affluents, including the feeders of Great Slave Lake, are the Athabasca, the Peace, the Liard and the Peel, and it is navigable throughout its course. It was discovered by Alexander Mackenzie in 1789.

Mackerel (mak'e-rel; *Scomber scombrus*), one of the spiny finned fishes (Acanthopteri), a well-known and excellent table fish, which inhabits almost the whole of the European seas and as far south as the Canary Islands, and from Greenland to Cape Cod, on the American coast. The American mackerel is also known as *S. vernalis*. Mackerel, like herring, are caught only when they approach the shore to spawn, nets being chiefly used. The Spanish mackerel *S. colias*, is found from Nova Scotia to Cape Hatteras, but is not much esteemed.

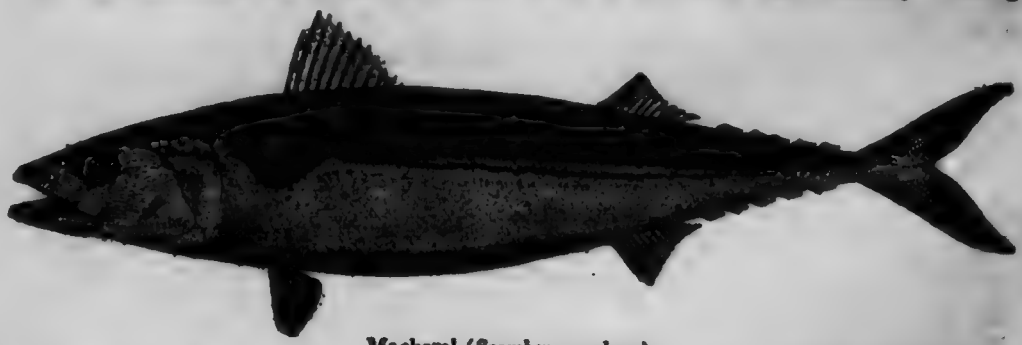
Mackintosh (mak'in-tosh), SIR JAMES, a Scottish historian and philosophical writer, born in 1765; died in 1832. He was educated at Aberdeen and Edinburgh; became a physician; published his *Vindiciæ Gallicæ* in answer to Burke's *Reflections on the French Revolution;* he afterwards quitted the medical profession and was called to the English bar in 1795. By reason of his brilliant lectures on the *Law of Nature and Nations*, and his defense of Peltier, who was prosecuted for a libel on Napoleon Bonaparte, he acquired fame at the bar, and received the honor of knighthood, and in 1804 was appointed recorder of Bombay. After an honorable career in India he returned to England; entered parliament for Nairn, and afterwards for Naresborough; became professor of law at Haileybury College (1818-24), a member of privy council, and in 1830 was made commissioner of Indian affairs.

Macle (mak'l), in mineralogy, a term applied to twin-crystals, which are united in various ways. Macle is also used as a name for chiastolite or crossstone.

MacLean, or Maclean (mak'-lăn), JOHN, statesman and jurist, was born in Morris Co., New Jersey, in 1785; died in 1861. He was admitted to the bar of Ohio in 1807; was elected to Congress in 1812 and again in 1814; was a judge of the Supreme Court of Ohio, 1816-22, and became Postmaster-General in 1823. He filled this office with much ability until 1829, when he declined a place in the cabinet of President Jackson and was appointed a judge of the Supreme Court of the United States. In 1857 he dissented from the decision of the court in the Dred Scott case. He was one of the Republican candidates for the presidential nomination in 1856, and received 196 votes.

MacLean, SARAH PRATT, novelist, born at Sunsbury, Connecticut, in 1856; married F. L. Green in 1887. Her novel of *Cape Cod Folks* was so strikingly realistic that suit was brought against her by some of the Cape Cod people for libel. She wrote also *Some Other Folks, Towhead*, etc.

Macleod (ma-kloud), FIONA, a pen name of William Sharp, who wrote also under his own name, Fiona Macleod being regarded as the real name of an author until recently. Among the works of Sharp under this name are *The Mountain Lovers, Green Fire, Pharais*, etc.



Mackerel (*Scomber scombrus*).

Maclise (ma-klēz'), DANIEL, a celebrated painter of Scottish descent, born at Cork in 1811; died in 1870. He became a student at the Royal Academy in 1828, and began to exhibit in 1829, but it was not until the year 1833 that he established his reputation with his picture of *Snap Apple Night*. Three years after he was elected an associate, and in 1840 he became a full member of the Royal Academy. Maclise was commissioned to paint for the new Houses of Parliament, and produced *The Spirit of Chivalry, The Spirit of Religion*, and the two great paintings of *The Meeting of Wellington and Blücher after Waterloo* and *The Death of Nelson* (1858-64). Among his best-known pictures are *Merry Christmas in the Baron's Hall, The Ordeal of Touch, The Marriage of Strongbow and Eva*, the *Play Scene in Hamlet*, the *Banquet Scene in Macbeth*, etc. His sketches, book illustrations, humorous drawings, and outline portraits were very numerous. He declined the presidency of the Academy in 1866. The works of Maclise show great fertility of invention, skill in composition, and excellence in drawing, but are not distinguished for color.

Macmahon (mak-mä-ōn), MARIE EDMÉ PATRICE MAU-

MON ES, Duke of Magenta and Marshal of France, born in 1808; educated at the military college of St. Cyr; served with distinction in Algeria; became brigadier-general in 1848; received command of a division during the Crimean war, and assisted in storming the Malakoff; took part in the campaign of 1859 against Austria, and won the battle of Magenta by his prompt handling of the left wing; and after the war became governor general of Algeria. At the outbreak of war between France and Germany (1870) Macmahon was placed in command of the First Army Corps, which was defeated at Weissenburg, Wörth, and finally fell back upon Châlons. Here he rallied his forces, and proceeded northeastward to relieve Bazaine, who was besieged in Metz, but he was pursued by the Germans, shut up by their encircling armies in the town of Sedan, and wounded in the battle before the final surrender. After the armistice with Germany he was employed by the Versailles government in putting down the commune, and in 1873 was president of the republic. He died in 1893.

MacMonnies (mak-mon'ēz), FREDERICK, sculptor, born at Brooklyn, New York, in 1863. His first figure, *Diana*, was exhibited in the Paris Salon of 1889, and in 1896 he was given the French decoration of the Legion of Honor. He made the notable fountains for the Chicago Exposition of 1893, the bronze doors for the Library of Congress, and other highly creditable works.

Macomb (ma-kōm'), a city, capital of McDonough Co., Illinois, 59 miles N. E. of Quincy. It has manufactures of earthenware, sewer pipe, drain tiles, electrical insulators, etc., and a State Normal School. Pop. 5774.

Macon (ma'kon), a city, capital of Bibb Co., Georgia, on the Ocmulgee River and the Georgia Central and Southern, and other railroads, 103 miles S. S. E. of Atlanta. It contains a fine court-house, State academy for the blind, etc., also the Mercer University. Here are iron and brass foundries, machine shops, railroad repair shops, woodworking shops, and large cotton and knitting mills. There is a large trade in cotton. Pop. 40,665.

Macpherson (mak-fer'son), JAMES, a Scottish author, was born in 1738, and died in 1796. He studied at Aberdeen and Edinburgh; became a school teacher, and afterwards a tutor; and in 1760 published *Fragments of Ancient Poetry*, translated from the Gaelic or Erse language. The success of this venture enabled Macpherson to issue the so called poems of *Ossian* in the form of *Fingal*, an ancient epic poem in six books (1762, 4to), and *Temora and other Poems* (1763, 4to). The genuineness of these poetical writings was severely questioned (see *Ossian*), but the 'editor' maintained his position without submitting the necessary proofs. Macpherson was afterwards agent to the Nabob of Arcot; had a seat in the House of Commons from 1780 to 1790, and was interred in Westminster Abbey. He was the author of a prose translation of Homer's *Iliad*, and of some other works.

MacPherson, JAMES BIRDSEYE, general, born in Sandusky Co., Ohio, in 1828. He was graduated at West Point in 1849, was engaged in the engineer corps, was chief engineer under Grant at Donelson and Shiloh, and in May, 1862, was made brigadier-general of volunteers, and major-general in October. He did splendid service at Vicksburg and under Sherman, forced General Johnston to abandon a strong position near Atlanta in July, 1864, and was killed in the battles around Atlanta, July 22, 1864.

Macready (ma-krē'di), WILLIAM CHARLES, English tragedian, born at London in 1793; died at Cheltenham in 1873. His father, the lessee and manager of several provincial theaters, sent him to Rugby and Oxford to be educated, but his circumstances became embarrassed, and the youth had to join his father's company at Birmingham in 1810. Afterwards he played in the provinces with considerable success, and appeared at Covent Garden in 1816. In 1826 he made his first visit to America, and in 1828 played in Paris, with great success in both countries. He undertook the management of Covent Garden in 1837, and Drury Lane in 1842, but although he did much to reform the stage and cultivate the public taste for Shakesperean drama in both theaters (he himself taking the leading parts in Shakespere's plays), his pecuniary losses required him to retire from managership. He revisited the United States in 1849; returned to England; gave a series of farewell performances, and finally retired from the stage in 1851. His *Reminiscences* appeared in 1875. While he was in the United States the rivalry between him and Edwin Forrest led to a serious riot in the streets of New York.

Macrobius (ma-krō'bi-us), AMBROSIUS AURELIUS THEODOSIUS, a Latin author in the reigns of the emperors Honorius and Theodosius (end of fourth and beginning of fifth century

A.D.). He was the author of a work entitled *Saturnalia*, valuable for the light it throws upon the manners and customs of antiquity.

Macrocystis (ma-krō-sis'tus), a genus of marine plants, belonging to the nat. order Algæ. The *M. pyrifera* exceeds all other vegetable productions in the length of its fronds, some of which have been estimated on reasonable grounds to attain a length of 700 feet. It is found in the southern temperate zone, and in the Pacific as far north as the Arctic regions.

Macropiper (mak'ro-pi-per), a genus of plants. See *Ava-ava*.

Macropus (mak'ro-pus; Gr. *makros*, long, *pous*, a foot), the generic name of the kangaroos, applied to them in allusion to their elongated hind feet. See *Kangaroo* and *Marsupialia*.

Macrura (ma-kru'ra; Gr. *makros*, long, *oura*, a tail), a family of stalk-eyed decapod crustaceans, including the lobster, prawn, shrimp.

Mactra (mak'tra), a genus of lamellibranchiate mollusca. They live in the sand, and are universally diffused. The genus includes many rare and beautiful species.

MacVeagh (mak'vā), WAYNE, statesman, was born at Phoenixville, Pennsylvania, in 1833. He entered the legal profession, was sent to Turkey as United States minister in 1870, and in 1881 was appointed by President Garfield Attorney-General of the United States, but resigned on the accession of President Arthur. He was ambassador to Italy, 1893-97, and chief counsel for the United States in the Venezuela arbitration before The Hague tribunal in 1903.—His brother, FRANKLIN MACVEAGH, was graduated in law in 1864, but ill health induced him to abandon practice in favor of a mercantile business. He was nominated by the Democratic party for senator from Illinois in 1894, but was defeated in the legislature. He became vice-president of the American Civic Federation and a member of the executive board of the National Civic Federation, and in 1909 was appointed by President Taft Secretary of the Treasury of the United States. He died Jan. 11, 1917.

MacVickar (mak-vik'ar), WILLIAM NELSON, bishop, was born at New York in 1843. He became a pastor in the Episcopal Church, was rector of Holy Trinity, New York, 1868-75, and of Holy Trinity, Philadelphia, 1875-96, when he was appointed coadjutor bishop of Rhode Island; succeeded as bishop in 1903. He was a very popular orator and preacher, and died in 1910.

Madagascar (mad-a-gas'kar), a large island in the Indian Ocean, 230 miles distant from the east coast of Africa, from which it is separated by Mozambique Channel; length, 975 miles; average breadth, 250 miles; area, about 228,500 square miles; population, about 3,000,000. Madagascar may be described as an elevated region, with an average height of 3000 to 5000 feet, overlooked by mountains rising in some cases to nearly 9000 feet. The coast exhibits a number of indentations, mostly small, and few of them good harbors, it being in great part rock, though in some places low and sandy. On some parts of the coast are numerous lagoons. The rivers are numerous, yet few of them offer even to a moderate extent the advantages of internal navigation. The climate is oppressively hot on the coast, but temperate on the highlands of the interior. The island is unhealthy for Europeans only in the neighborhood of lagoons or marshes. The rainy season continues from December to April. The most striking feature in the vegetation is a belt of dense forest, with an average breadth of 15 to 20 miles, passing round the whole island. It is found at all levels from 6000 feet to the water's edge, and the trees include palms, ebony, mahogany, fig, cocoanut, and the ravinala or traveler's tree (*Uranis speciosa*), which when pierced yields a refreshing liquid. The vegetable products grown for food include rice, manioc or cassava, sweet potatoes, groundnuts and yams. Ginger, pepper and indigo grow wild in the woods; cotton, sugar-cane, coffee, tobacco and hemp are cultivated. India-rubber, gum copal and dyewoods are exported. Humped cattle are found in immense herds, and form a large part of the wealth of the inhabitants, as also sheep, goats, swine and horses. The most characteristic of the mammals are the lemurs. The birds are numerous; snakes are rare; crocodiles, lizards, chameleons abound. The inhabitants, called Malagasy, belong to the Malayo-Polynesian stock and speak a Malayan language. They appear to form a single race, though they are divided into numerous tribes, each having a distinctive name and customs. The Hovas are the ruling tribe, they having extended their sway over nearly the whole island, while the other chief tribes are the Betsimasaraka, the Betsileo and the Sakalava. In the coast districts the houses of the better class are built of framed timber with lofty roofs; the dwellings of the lower classes are constructed of bamboo or rushes, or even of clay. The Malagasy show much aptitude

as silversmiths, gunsmiths, carpenters, and with rude looms make handsome cloths. The religion of the great bulk of the people is a kind of fetishism or worship of charms. Many of their superstitious customs have been abolished and Christianity adopted, chiefly by the Hovas, but polygamy and infanticide are still practiced. The island has been held by France since 1895. Imports and exports are valued at $4,000,000 annually. The capital is Antananarivo, in the elevated central region, the towns next in importance being Mojanga, a port on the west, and Tamatave, a port on the east coast.—Madagascar was known to the Greek geographers and the Arabians, and to Marco Polo at the end of the thirteenth century, and in 1506 was visited by the Portuguese, who gave it the name of St. Lorenzo. Towards the end of the seventeenth and during the most of the eighteenth century the French established themselves in the island, but they were only able after a hard struggle to retain the islands of Ste. Marie on the east coast and Nossi-bé on the northwest. In the year 1810 Radama I became king of the Hovas, and with his approval Christian missionaries began to teach in the capital in 1820, many converts were made, the Bible was translated into the Malagasy tongue, the language was first reduced to a systematic written form, and printing was introduced. In 1828 he was succeeded by his chief wife, Ranavalona, a woman of cruel disposition, who persecuted the Christians and closed the island to Europeans. She was succeeded in 1861 by her son, Radama II, who reopened it to the missionaries and emancipated the African slaves. He also granted extensive territories and privileges to France, an act which offended his chiefs and led to his assassination in 1863. His wife occupied the throne five years, and on Ranavalona II becoming queen in 1868, the French brought forward their claims on the Malagasy territory, which, being refused, led to war. This resulted in a treaty (1885) by which the French received Diego Suarez Bay for a naval station, an indemnity of $4,000,000, and the control of foreign relationships. By the Anglo-French agreement of August 5, 1890, the protectorate of France over Madagascar was recognised by Great Britain. A rebellion led to the French conquest of the island in 1896.

Madden (mad'en), Sir Frederick, born at Portsmouth in 1801; died in London in 1873. He early gave himself up to antiquarian pursuits; in 1828 he was appointed assistant keeper of MSS. in the British Museum, and in 1837 head keeper. He was knighted by William IV. He edited a large number of early English works and MSS.

Madder (mad'er), a dye plant, *Rubia tinctorum*, nat. order Rubiaceæ. It is a climbing perennial, with whorls of dark green leaves, and small yellowish cross-shaped flowers. The prepared root is used as a red dye-stuff. It yields colors of the greatest permanence, and is employed for dyeing both linen and cotton. Two kinds of it are fixed upon cotton; one is simply called *madder-red*, and the other, which possesses a much higher degree of luster and fixity, is called *Turkey* or *Adrianople red*, because it was for a long time obtained entirely from the Levant, where it was called *alizari*. The coloring principle of madder is termed *alizarine*, and as this can now be obtained artificially from coal tar, the use of madder in dyeing is almost entirely superseded by that of artificial alizarine (which see).

Madder Plant.

Madeira (mȧ-dē'rȧ), a Portuguese island in the North Atlantic, 360 miles from the coast of Africa, 530 miles from Lisbon, 1215 from Plymouth; length, 30 miles; breadth, 13 miles; area, about 313 square miles. The island is traversed by a central mountain-ridge, the highest point of which reaches 6000 feet; from this great spurs descend to the coast, forming lofty precipices; and in the bays formed between these volcanic cliffs are situated the villages of Madeira. Adjacent to Madeira is Porto Santo, a small island, and the Desertas, which, with Madeira itself, compose the group of the Madeiras. The staple products of Madeira are wine and sugar; coffee and arrow-root are also grown and a variety of tropical fruits. The wine of Madeira was formerly famous, but a disease of the vines almost ruined the trade. The mean annual temperature is 65°, the two hottest months being August and September, and the three coldest, January, February and March. The climate is equable and the island is considered an excellent sanatorium for chest diseases. The capital and chief center of trade is Funchal. The Madeiras were known to the Romans, and were rediscovered and colonized by

the Portuguese government in 1481. Pop. 150,574.

Madeira, a large navigable river of South America, a tributary of the Amazon, about 800 miles long, formed by the united streams Beni, Mamore, and Guapore on the frontiers of Brazil and Bolivia.

Madeley (mad'e-li), a town of England in Shropshire, on the Severn. Pop. (1911) 8859.

Madero (ma-dā'rō), Francisco Indalecio, President of Mexico, born in 1873. In 1903 Madero came into public notice as a leader of the independent voters of his native state, Coahuila. Organizing an uprising in 1910, he forced Diaz to resign. He was chosen president in October, 1911; but revolts threatened his position. He was forced to resign, February 14, 1913, and nine days later was shot in the streets of the capital.

Madison (mad'i-son), a village of Madison Co., Ill. It has rolling mills, carworks, etc. Pop. 5046.

Madison, a city of Indiana, capital of Jefferson Co., on the Ohio River, 88 miles below Cincinnati. It is a tobacco market and a manufacturing city, producing steamboats, engines, boilers, flour, cotton and woolen goods, catsup, etc. Pop. 8500.

Madison, a city, capital of the State of Wisconsin, is situated on an isthmus between lakes Mendota and Monona, 75 miles W. of Milwaukee. It contains a handsome capitol and the University of Wisconsin. Here are also the Wisconsin Academy of Science, Arts and Letters, the Washburn Observatory, the Geological and Natural History Survey, the State Historical Society, etc. Its industries include foundries, machine shops, carriage shops, agricultural implement and electrical apparatus works, and various others. The city was settled in 1837. Pop. 25,531.

Madison, James, fourth President of the United States, 1809-17, was born in Virginia in 1751; died in 1836. He was educated at Princeton; elected to the Virginia Convention in 1776; became a member of the council of state; took his seat in the Continental Congress in 1780, and was there made chairman of the Committee of Foreign Affairs. He was especially active in the Constitutional Convention of 1787, keeping notes of its proceedings which afterwards became very valuable. He strongly advocated the acceptance of the Constitution by Virginia, and was one of the able writers of *The Federalist*. Under the administration of Jefferson he became Secretary of State, and in 1808 he was elected President, serving for two terms. During his administration war was declared with Great Britain, and was prosecuted for [illegible] years with alternate defeat and s[illegible] until the decisive battle of New O[illegible] was fought, and peace signed in 1814. Madison retired into private life in 1817.

Madisonville, formerly a village in Hamilton Co., Ohio, 9 miles N. E. of Cincinnati. It became part of the city of Cincinnati in 1911.

Madness. *See Insanity.*

Madoc (ma'dok), according to a Welsh tradition, son of Owen Gwynned, a Welsh prince, who, in 1170, put to sea with ten ships, and discovered land in the west, supposed to be America. He made a second voyage, but finally was lost to the knowledge of his countrymen. Southey has made Madoc the subject of a poem.

Madonna (ma-don'a), an Italian term of address equivalent to *Madam*. It is given specifically to the Virgin Mary, like Our Lady in English, and hence pictures representing the Virgin are generally called *madonnas*.

Madoqua (mad'o-kwa), a very tiny antelope of Abyssinia (*Antilope saltiana* or *Neotragus saltiana*), about as large as a good-sized hare, and with very slender legs.

Madras (ma-dras'), a maritime city of British India, capital of the presidency of the same name, on the Coromandel coast. It is ill situated for commerce, standing on an open surf-broken shore with no proper harbor, though an area has recently been enclosed by piers so as to shelter a certain amount of shipping. Still it carries on an extensive commerce, being the terminus of railways from Bombay and the south, while it is also the headquarters of all the presidency departments. The town is disappointing in appearance, the site being flat and there being no handsome streets, though there are some good buildings. Altogether the municipality covers an area of 27 square miles, the native and business part being called the Black Town. The chief objects of interest are the citadel of Fort St. George, built in 1639, the cathedral of St. George, Scotch church, government house, senate house, revenue buildings, college, etc. There are no manufactures to speak of, but the export and import trade is large. Madras was founded in 1639 by the English, and soon became their chief settlement on the coast. Pop. 562,191.

Madras, Presidency of, includes with its dependencies and the state

of Mysore the entire south of the peninsula of India. Its extreme length is 950 miles, breadth 450 miles; area, 141,726 square miles, the native states included covering 9969 more. It is surrounded on every side except the north by the sea, on which side it is bounded by Orissa, the Central Provinces, the territory of Hyderabad and Mysore. The three chief rivers, Godavari, Krishna and Kaveri, rise in the Western Ghâts and enter the Bay of Bengal. The climate is varied: in the Nilgiri Hills it is temperate, on the Malabar coast the monsoon brings an excessive rainfall, while in the central tableland the rainfall is low, and the heat almost unendurable. The soil is sandy along the coast, but there are many fertile districts; while iron, copper, lead and coal are found in considerable quantities. There are extensive forests in the presidency, yielding teak, ebony, and other valuable timber trees. The principal vegetable products are rice, wheat, barley, maize, and other grains; sugar-cane, areca, yam, plantain, tamarind, jackfruit, mango, melons, cocoanuts, ginger, turmeric, pepper, tobacco, oil seeds, coffee and cotton. The wild animals met with are the elephant, tiger, chetah, jackal, wild hog, etc. The Madras administrative authority is vested in a governor, with a council of three members appointed by the queen, and of whom one is the commander-in-chief. For legislative purposes the council is increased by nominations of the governor. The chief educational institution is the Madras University, an examining body granting degrees in arts, law, medicine and engineering. The population is 41,693,882, and the native protected states have in addition a population of 4,188,088. The chief languages spoken are the Dravidian, namely, Tamil, Telugu (which are spoken by the great majority of the inhabitants), Canarese and Malayalam, while Hindustani is the language spoken by the Mohammedans.

Madrepore (mad're-pōr), a coral-building polyp of the genus *Madrepōra*, the type of the family Madreporidæ, forming coral of stony hardness and of a spreading or branching form, hence called *tree-coral*. Madrepore coral is of a white color wrinkled on the surface and full of little cavities, in each of which an individual polyp is lodged. These polyps raise up walls and reefs of coral rocks with astonishing rapidity in tropical climates. The term is often applied also to other branching corals.

Madrid (mâ-drid'), the capital of Spain, in New Castile, in the province of Madrid, on the Manzanares, near the center of the Iberian Peninsula. Situated upon a high plateau, 2450 feet above the sea, windswept from the snowy Guadarrama, with unhealthy extremes of temperature, the city has no advantages except the fanciful geographical merit of being the center of Spain. The principal streets are broad, long and airy; but the squares are generally irregularly built and deficient in decorative monuments. The royal palace, a combination of Ionic and Doric architecture, is one of the most magnificent in the world, being 470 feet each way, and 100 feet high. It contains a small but splendid Corinthian chapel, a library of nearly 100,000 volumes, and a fine collection of ancient armor and coins. Madrid has no cathedral, being only a suffragan bishopric of Toledo, and the churches are few and uninteresting. The bull fights take place in the Plaza de Toros (bull ring), a building which is about 1100 feet in circumference, and capable of containing 12,000 spectators. The Prado, nearly two miles long, a boulevard on the east of the city, forms the popular promenade, and beyond it is the park. The Royal Museum of Painting and Sculpture, in the Prado, contains more than 2000 pictures. The National Library, founded by Philip V, contains 230,000 volumes. The University has an average attendance of 5000 students, and there are numerous colleges and schools, medical, military, law, etc. The manufactures are of small importance. Madrid only began to be a place of importance under Charles V, and in 1560 Philip II declared it to be the capital. It has not increased much since the reign of Philip VI. Pop. 571,539.

Madrigal (mad'ri-gal), a short amorous poem, consisting of not less than three or four stanzas or strophes, and containing some tender and delicate, though simple thought, suitably expressed. The madrigal was first cultivated in Italy, and those of Tasso are among the finest specimens of Italian poetry. Several English poets of the time of Elizabeth and the Charleses wrote madrigals of notable grace and elegance, the chief names being Lodge, Withers, Carew and Suckling.—The term is also applied to an elaborate vocal composition now commonly of two or more movements, and in five or six parts. The musical madrigal was at first a simple song, but afterwards was suited to an instrumental accompaniment. There are a number of famous English composers of madrigals.

Madstone (mad'stōn), a stone about the shape and size of a hen's egg, which is kept by some super-

stitious people of the United States with the belief that it will absorb snake venom and cure hydrophobia.

Madura (ma-dō'ra), a district of India forming part of the Madras presidency, mostly a plain drained by the Vaigai River; skirted on the southwest by the Travancore Hills; area, 8701 square miles; pop. 2,831,280. The capital of the same name contains the vast palace of the ancient rajahs, now going to decay, and the Great Temple, one of the most remarkable monuments of Hindu architecture. The chief buildings of Madura are connected with the name of Tirumala Nayak, who reigned from 1623 to 1659. Near the town is a remarkable eminence, called, from its shape, the Elephant Rock. The town has been much improved under British rule. Pop. (1911) 184,130.

Madura, an island of the Indian Archipelago, N. E. of Java, and separated from it by the Strait of Madura; 105 miles long, and 30 miles broad; and belonging to the Dutch. The island is not very fertile. The inhabitants, mostly Mohammedan, are governed by native princes. Cattle rearing is the chief industry, while the chief products are maize, cocoanuts, tobacco, Jamaica pepper and tamarinds. The principal town is Sumanap. Pop. 1,652,580.

Madvig (mad'vig), JOHAN NIKOLAI, a Danish scholar, born in 1804; died in 1886; long professor of Latin in the University of Copenhagen. He is best known by his excellent Latin grammar translated into most European tongues.

Mæander (mē-an'dēr), now MEINDER, a river of Asia Minor, which enters the Ægean. It was celebrated among the ancients for its winding course, and has given us the verb to *meander*.

Mæcenas (mē-sē'nas), CAIUS CILNIUS, a distinguished Roman, born between 73 and 63 B.C.; died in 8 B.C. He was the companion of the Emperor Augustus in nearly all his campaigns, and his most trustworthy counselor in political matters. For the three years 18-15 B.C. he was invested with the government of Italy. His great glory, however, was as a patron of learning, and the friend of Virgil and Horace.

Maelar (mē'lar), a beautiful lake of Sweden, length about 75 miles; average breadth 12 miles; irregularly formed and dotted with innumerable islands. Stockholm is situated at its exit to the Baltic.

Maelstrom (māl'strom), a celebrated whirlpool off the coast of Norway, near the island of Moskoe, one of the Lofoden Islands. When a strong wind is blowing from the northwest the whirlpool rages violently, sufficiently so as to be heard several miles away, and to engulf small vessels which approach the eddying waters too nearly.

Mæotis. See *Azof, Sea of.*

Maestoso (ma-es-tō'sō), an Italian musical term meaning in a majestic or lofty style.

Maestricht, or MAASTRICHT (mäs'trikt; Latin, *Trajectus ad Mosam*), a town of Holland, capital of the province of Limburg, on the left bank of the Maas. It lies on the Belgian frontier, 56 miles east of Brussels, and 52 miles west by south of Cologne. Among the chief buildings are the church of St. Servaas, dating from the tenth century; another old church, and the town hall (Stadhuis). Maesthricht was once one of the strongest fortresses in Europe. Pop. (1910) 38,611.

Maeterlinck (mā'ter-link), MAURICE, a Belgian dramatist, born at Ghent in 1864. He has been called the 'Belgian Shakespere,' and won reputation by *Le Princesse Maleine* (1890). This was followed by other plays, essays, etc.

Maffia (ma'fi-a), LA, a secret society originating in Sicily, having for its aim the substitution of its own laws for that of the state. Branches have been formed in the United States, where their members are suspected of fomenting atrocious crimes. The chief of police of New Orleans, La., was murdered by the Maffia in 1890. On the acquittal of the accused, a mob broke into the jail and lynched eleven of them, an outrage which led to a diplomatic controversy with Italy.

Mafra (mä'fra), a town of Portugal, province of Estremadura, 17 miles northwest of Lisbon, and near the coast. It is noticeable only for the magnificent building, erected here by John V in 1717, in imitation of the Escurial of Spain, which forms a quadrangle, measuring east to west 760 feet, and north to south 670 feet, and includes a church, a royal palace, a college with a library of about 50,000 volumes, and a monastery with 300 cells. Pop. 4769.

Magadoxo (mä-gä-dō'shō), MOGDISHA or MOGDISHU, a seaport on the east coast of Africa, lat. 2° N., with a considerable trade. Magadoxo is subject to the Sultan of Zanzibar, but its administration has been handed over to the Imperial British East African Co. Pop. 6000.

Magalhaens (mȧ-gȧl-yȧ'ens), or MAGELLAN (ma-jel'an), FERNANDO DE, a Portuguese navigator, who conducted the first expedition round the world. Born about 1470 he served under Albuquerque in the East Indies; distinguished himself at the taking of Malacca in 1511; in 1519 received the command of a fleet of five ships from Charles V of Spain, with which he sailed westward; entered the strait since called after his name, and discovered the Pacific Ocean. Crossing this ocean, he was killed in a skirmish with the natives on one of the Philippines, but one of his vessels was brought to Spain by Juan Sebastian del Cano, thus completing the circumnavigation.

Magazines. See *Periodicals.*

Magazine Guns, a term applied to that class of small arms which carry extra cartridges. These have come into general use within recent years for sportsmen and soldiers, and include various inventions for feeding the extra cartridges and ejecting the empty shells.

Magdala (mȧg'da-lȧ), a town and fortress of Abyssinia, nearly 9000 feet above the level of the sea, about 120 miles southeast of Gondar. Magdala acquired importance from having been stormed April 12, 1868, by the British troops. See *Abyssinia.*

Magdalen (mag'da-len), or MAGDALENE, MARY, that is, Mary of Magdȧla, a woman mentioned in the New Testament as having had seven devils cast out of her, as watching the crucifixion, and as having come early to the sepulcher on the resurrection morning. She was erroneously identified as the 'woman who was a sinner' (Luke, vii, 37), and hence the term Magdalen came to be equivalent to a penitent fallen woman.

Magdalena (mag-da-lē'na), a large river of South America which rises in the central Cordillera of the Andes, in Ecuador; flows generally north through Colombia, and falls into the Caribbean Sea by several mouths; length 970 miles. The Magdalena is navigable as far as Honda, 435 miles from its embouchure.

Magdalen Institutions (see *Magdalen*) are intended to afford a retreat to penitent prostitutes, and the first was established in London, in 1758.

Magdeburg (mȧȧ'dē-burȧ), the capital of Prussian Saxony, and a fortress of the first class, on the Elbe, 76 miles W. S. W. of Berlin, chiefly on the left bank of the river, which here divides into three arms. The chief buildings are the Dom or cathedral, erected in the thirteenth and fourteenth centuries, and repaired in recent times; the town house, government buildings, exchange, central railway station and theater. The industries are very varied, embracing machinery, castings, armor plates, chemicals, spirits, pottery, sugar, beer, cottons, ribbons, leather, etc. The trade is extensive both by rail and river; for sugar Magdeburg is the chief center in Germany. Magdeburg is a place of great antiquity, being a trading center in the ninth century. It early distinguished itself in the Reformation. During the Thirty Years' war the town was besieged, stormed, and sacked by Tilly, when 20,000 persons are said to have been murdered. Pop. (1910) 279,685.

Magdeburg Hemispheres. These are two hollow hemispheres of copper or brass, fitting accurately, and arranged so that the air can be withdrawn from them and a vacuum formed within. When thus exhausted they cling together with great force. If a foot in diameter, the pressure upon them amounts to nearly a ton.

Magellan. See *Magalhaens.*

Magellan (ma-jel'lan), STRAIT OF, separates the continent of South America from Tierra del Fuego, 300 miles long; varies in breadth from 5 to 50 miles, and forms communication between the South Atlantic and South Pacific oceans. The number of obstructing islands makes the channel difficult of navigation. The strait was discovered in 1520 by Fernando de Magalhaens, or Magellan, during his celebrated voyage.

Magellanic Clouds (ma-jel-lan'ik), two oval-shaped cloud-like masses of light in the southern hemisphere near the pole, consisting of swarms of stars, clusters and nebulæ of every description. They cover spaces in the heavens of 42 and 10 square degrees respectively.

Magendie (mȧ-shan-dē), FRANÇOIS, a French physiologist, born in 1783; died in 1855. Educated for the medical profession in Paris, he was made demonstrator of anatomy by Boyer; became physician to the Hôtel-Dieu; was elected a member of the Academy of Sciences in 1819; and in 1831 received the anatomy professorship in the College of France. By his extensive use of vivisection he made important discoveries in physiology, and he published important works.

Magenta (mȧ-jen'tȧ), a small town of North Italy, 14 miles east from Milan, on the high road to Novara. On June 4, 1859, Magenta was the scene of a decisive victory won by the French and Sardinians over the Austrians, and it, in consequence, gave the title of Duke of Magenta to Marshal Macmahon. Pop. 8012.

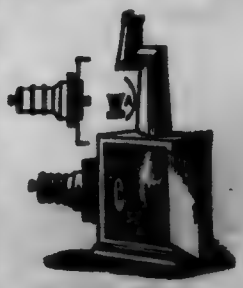
Magenta, a brilliant blue-red coloring substance derived from aniline.

Maggiore, LAKE. See *Lago Maggiore.*

Magi (mȧ'jī), the hereditary priests among the Medes and Persians, set apart to manage the sacred rites, and preserve and propagate the sacred traditions, acting also as diviners and astrologers. They possessed great influence both in public and private affairs, conducted the education of the princes, etc. Their order was reformed by Zoroaster. (See *Zoroaster.*) The name came also to be applied to holy men or sages in the East.

Magic (maj'ik), the art or pretended art or practice of producing wonderful effects by the aid of superhuman beings or of departed spirits or the occult powers of nature. The word is used to include a mass of beliefs and practices which bear on matters beyond the ordinary known actions of cause and effect. A large proportion of magical rites are connected with the religious beliefs of those using them, their efficacy being ascribed to supernatural beings. There is, however, a non-spiritual element in magic which depends on certain imagined powers and correspondences in nature, that can be utilized in various ways. (See *Alchemy, Astrology, Charm, Divination, Witchcraft.*) In savage countries the native magician is often sorcerer and priest, and sometimes chief of the tribe. Among the ancient Egyptians magic was worked into an elaborate system and ritual, and it was regularly practiced among the Babylonians and Assyrians, as well as in Greece and Rome. Alexandria, from the second to the fourth century, became the headquarters of theurgic magic, in which invocations, sacrifices, diagrams, talismans, etc., were systematically employed. This system, influenced by Jewish magical speculation, had a strong hold in mediæval Europe, and many distinguished names are found among its students and professors. The magic which holds a place still among the illiterate and ignorant classes has come down by tradition in popular folk-lore. The name *natural magic* has been given to the art of applying natural causes to produce surprising effects. It includes the art of performing tricks and exhibiting illusions by means of apparatus, the performances of automaton figures, etc. See *Legerdemain.*

Magic Lantern, a kind of lantern invented by Kircher, a German Jesuit (1604-80), by means of which small pictures or figures are represented on the wall of a dark room or on a white sheet, magnified to any size at pleasure. It consists of a closed lantern or box, in which are placed a lamp and a concave mirror (as at A), which reflects the light of the lamp through the small hole of a tube in the side of the lantern, which is made to draw out. At the end of this tube, next to the lamp, is fixed a plano-convex lens (B), and at the other a double-convex lens (D). Between the two lenses are successively placed (at C) various slips of glass, with transparent paintings, representing various subjects, which are thrown in a magnified form on the wall or screen opposite to the lantern and spectators. It has been vastly improved of late, and the substitution of the oxyhydrogen and electric lights for the oil lamp has added much to the effectiveness of its displays; while photography applied to the production of objects has almost indefinitely increased its resources.



Magic Lantern.

Magic Square, is a term applied to a series of numbers in arithmetical progression, arranged in equal and parallel rows and columns, in such a manner that the vertical, horizontal and diagonal columns when added shall give the same sums. The question of magic squares is in itself of no use, yet it possesses a curious interest to those interested in the properties of numbers. A specimen of these squares is here given. There are also *Magic Circles, Magic Cubes, Magic Cylinders, Magic Spheres,* etc., in all of which the same result is brought about by various arrangements of the terms of an arithmetical series.

2	7	6
9	5	1
4	3	8

Magic Square.

Magilp (ma-gilp'), a gelatinous compound produced by mixing linseed oil and mastic varnish together, used by artists as a vehicle in oil paint

ing. The proportions vary according to the work. It is thinned with turpentine.

Maginn (ma-gin'), WILLIAM, born at Cork in 1794; died at Walton-on-Thames in 1842. He was educated at Trinity College, Dublin, and established himself as a literary man in London. He was for long a regular contributor to *Blackwood's Magazine*, and was successively editor of the *Standard*, of *Fraser's Magazine*, and other publications. Notwithstanding his splendid scholarship and talent for popular writing, his irregular habits brought him to bankruptcy and a debtor's prison. His *Homeric Ballads*, *Shakespere Papers*, etc., were collected and published after his death.

Magione (mä-ji-ō'nā), a town of Central Italy, 8 miles w. s. w. of Perugia. Pop. 6980.

Magistrate (maj'is-trāt), a public civil officer invested with the executive government or some branch of it. In this sense a king is the highest or first magistrate in a monarchy, as is the president in a republic. But the word is more particularly applied to subordinate officers, to whom the executive power of the law is committed, either wholly or in part, as governors, intendants, prefects, mayors, justices of the peace, and the like.

Magna Charta Libertatum, the Great Charter of Liberties, a document forming part of the English constitution, and regarded as one of the mainstays of English liberty, extorted from King John by the confederated barons in 1215. Its most important articles are those which provide that no freeman shall be taken, or imprisoned, or proceeded against except by the lawful judgment of his peers or by the law of the land; and that no scutage or aid shall be imposed in the kingdom (except certain feudal dues from tenants of the crown), unless by the common council of the kingdom. The remaining and greater part of the charter is directed against abuses of the king's power as feudal superior. It originally contained sixty-three clauses; subsequent confirmations altered the number of these till 1225, when it took its final and accepted form with thirty-seven clauses. The most accurate and complete copy of the original charter is that preserved in Lincoln Cathedral. The board of commissioners on the public records ordered a facsimile of it to be engraved, and it has been frequently translated from its original Latin into English.

Magna Græcia (mag'na grē'sha), the collective name given to the Greek cities and settlements in Southern Italy mostly founded in the eighth century B.C. by different Greek peoples. The Chalcidians founded Rhegium about 730 B.C.; and subsequently Croton, Sybaris, Tarentum, etc., were founded. These colonies and their offshoots reached a great pitch of wealth and power in the seventh and sixth centuries B.C. Mutual discord, however, gradually weakened them, and their independent existence came to an end in the third century B.C., when they were conquered by the Romans.

Magnesia (mag-nē'shi-a), the name of two ancient cities of Asia Minor: (1) A city of Ionia on the river Lethæus, a tributary of the Mæander. (2) A town of Lydia on the southern bank of the Hermus. See *Manisa*.

Magnesia, a white tasteless earthy substance, possessing alkaline properties, and having a specific gravity of 2.3. It is absorbent, antacid, mildly cathartic, and almost insoluble. It is found native in the state of hydrate and carbonate, and exists as a component part of several minerals. In commerce, pure magnesia is generally distinguished by the term *calcined magnesia*, and is readily obtained by exposing its hydrated carbonate to a red heat. The hydrated carbonate goes by the name of *magnesia* or *magnesia alba*. The chief use of magnesia and its carbonate is in medicine. See *Magnesium*.

Magnesian Limestone (mag-nē'shi-an), a yellowish rock composed of carbonates of lime and magnesia, the latter amounting in some cases to nearly a half. There are several varieties, more or less useful for building or ornamental purposes, which are included under the generic name dolomite. The same name is also given to the whole Permian formation, from this rock being very largely developed in it.

Magnesium, the metallic base of magnesia; chemical symbol Mg, atomic weight 24.5. It may be obtained by decomposing chloride of magnesium by means of potassium. It is of a white color like silver; its luster is metallic and brilliant; it is very malleable, and fuses at a red heat. Heated to redness in oxygen gas, it burns with brilliancy, and combining with oxygen becomes magnesia, or the oxide of magnesium (MgO). The magnesium light is rich in chemical rays, and is now employed to some extent in photography. The chief salts are the carbonate, the chloride, the sulphate (Epsom salt), the phosphates and the silicates, among

which are such minerals as chrysolite, meerschaum, soapstone and serpentine.

Magnet. See *Magnetism.*

Magnetic Lift, an arrangement now much used for lifting heavy weights by the aid of powerful artificial magnets. These are adapted to form part of a traveling crane, strong magnets, energised by powerful currents of electricity, being employed. These will lift and carry iron masses of considerable weight, consisting of detached parts, yet all lifted together by the magnetic force. They can be dropped at any desired point by breaking the current, when the magnetic power ceases. Thus work can be quickly done which would require considerable time and labor in loading and carrying in the ordinary way. A notable example was given in the case of a sunken ship at New Orleans laden with kegs of nails. These were lifted from a considerable depth of water by the use of a magnet, the nails coming up in a coherent mass in instances where the kegs had been broken.

Magnetism (mag'net-izm), the science which treats of the phenomena exhibited by magnets—phenomena due to one of those forces which, like electricity and heat, are known only by their effects. The phenomena of magnetism were first observed in the loadstone or *magnet* (so named from Magnesia in Asia Minor). The loadstone is a kind of iron ore (magnetic iron ore), and is found in many parts of the world, especially in the Scandinavian peninsula and in Siberia. It has the power of attracting small pieces of iron or steel, and when suspended in such a way as to be able to move freely, always points to what are called the magnetic poles of the earth, that is, nearly north and south. A piece of loadstone forms a *natural magnet*, and has the further remarkable power of giving all its own properties to hard iron or steel when these bodies are rubbed by it. A bar or mass of iron or steel to which the peculiar properties of a natural magnet have been imparted by friction from other magnets or by electric *induction* is called an *artificial magnet*. When freely suspended, all magnets, natural and artificial, rest with their lengths in a northerly and southerly direction, and this property is utilized in the well-known compass. They attract iron and other magnetic substances with a force increasing from the middle of the magnet to its extremities, which are called its *poles*. The magnetism at the two poles is different, that pole which points to the north is distinguished as the north or north-seeking or austral pole, or by the sign plus (+); that which points to the south as the south or south-seeking or boreal pole, or by the sign minus (—). The poles of the same denomination repel each other, while those of different names have mutual attraction, thus resembling the two electricities, positive and negative. The intensity of this attraction and repulsion varies inversely as the square of the distance, a law which also governs electrified bodies. Magnetism pervades the earth as electricity does the atmosphere. It assumes a totally different form in different substances; the metals iron, nickel and cobalt being strongly attracted by the magnet; others such as bismuth, copper, silver, gold, etc., being repelled. (See *Diamagnetic.*) Whether or not this is an actual repulsion, however, is in doubt, as it may be due to the superior magnetic power of oxygen, which in its response to magnetism may force these feebler substances away. The space in the neighborhood of a magnet is called the *magnetic field;* a piece of soft iron brought into this space becomes magnetic, but it loses its magnetism as rapidly on removal from the field. (See *Induction, Magnetic.*) Steel has *coercive force*, in virtue of which it requires time for magnetization, and retains its magnetism on removal from the field. Hard steel may be made magnetic by rubbing it several times in the same direction with a powerful magnet, and hence it is easy to multiply magnets. The most powerful permanent magnets are produced by rubbing bars of steel on electromagnets (see *Electro-magnetism*), or by moving them backwards and forwards along the axis of a coil of wire in which an electric current is passing. A bar is magnetized to saturation when its magnetism is as great as it can retain without future sensible loss. When a magnet is broken into a number of pieces each piece is found to be magnetic, and its north pole is found to have been directed towards the north pole of the unbroken magnet. When these pieces are put together again poles placed in contact nullify each other, and the original magnet is reproduced. From this fact it has been suggested that magnetism is an affection of the particles which make up the magnet, Ampere having advanced the theory that every atom is a natural magnet and that when these act in unison the whole mass displays magnetic force.

Terrestrial magnetism, which pervades the whole earth, is extremely complicated.

It becomes manifest by its influence on the magnetic needle, varying with time and place over the earth. One pole of the needle points towards the north, the other towards the south. There are, however, only two lines on the surface of the earth on which it points directly north and south, and where the magnetic and geographical meridians appear to coincide. Elsewhere the needle deviates more or less from the true north. This is termed the declination of the needle, and varies from place to place, and in the course of time at the same place. (See *Isogonic.*) When a needle is balanced on a horizontal axis so that it can turn in a vertical plane, the extremity attracted by the nearer magnetic pole of the earth points more or less downwards. (See *Dipping-needle.*) The angle thus made is called the dip or inclination, and the lines marking equal inclinations on a map are called *isoclinal* lines. They intersect the isogonal lines, and the dip increases towards the perpendicular as the magnetic poles are neared. These magnetic poles do not coincide with the geographical poles, the northern being in 70° 5′ N. and 96° 43′ W. The southern was located by the Shackleton expedition of 1908, in lat. 72° 23′ S. and lon. 154° E. There are two foci of maximum force in the northern hemisphere and two in the southern. In the northern hemisphere the stronger focus is assumed to be in 52° N. and 90° W., and the weaker in 70° N. and 115° E. In the southern hemisphere the stronger focus is assumed to be in 65° S. and 140° E., and the weaker probably in 50° S. and 130° E. The earth's magnetism is subject to vast unaccountable commotions or storms of immense extent, which occur at irregular intervals and are of short duration. They are often connected with manifestations of electrical phenomena, such as the aurora borealis, or thunder storms. These disturbances are made manifest by irregular motions of the magnetic needle. The various phenomena connected with terrestrial magnetism are now automatically recorded, and systematized in the interests of meteorology. The magnetic equator or line of no dip crosses the terrestrial equator in several places, extending alternately on each side, but never deviating more than 12° from it.

Magnetism, ANIMAL. See *Mesmerism.*

Magneto-electricity (mag'ne-tē), treats of the currents of electricity produced in a conductor when its position is changed relatively to a magnetic field (see *Induced Current*), whereas electro-magnetism (which see) treats of magnetization produced by currents.

Magneto-electric Machines. In magneto-electric machines an electro-magnet of compact form called the armature is caused to rotate near the poles of a powerful fixed magnet, in such a manner that the core of the armature becomes magnetised first in one direction and then in the opposite, by the inductive action of the poles of the fixed magnet. Every change in the magnetization of the core induces a current in the coil wound upon it. Hence currents in alternately opposite directions are excited in this coil, their strength increasing with the speed of rotation. It is now usual in powerful machines of this class to employ electro-magnets as the fixed magnets, and the current which feeds these fixed magnets (called the *field magnets*) is often the current generated by the machine itself. The machines in this case are called dynamo machines. This name was originally confined to machines which thus supply the current for their own field magnets; but it is now applied to any machine in which the field magnets are electro-magnets. Such machines, of which there is an enormous variety, driven by steam engines or other powerful motors, are now almost universally employed when electric currents are required on a large scale, as in electric lighting. See the articles *Dynamo, Electric Light, Electro-magnet, Electro-magnetism, Electro-motors.*

Magnetometer (mag-net-om'e-tēr), an instrument employed for observing the magnetic declination, and also for other absolute magnetic measurements. They are of various forms and are usually self-recording. See *Declinometer, Dipping-needle.*

Magnificat (mag-nif'i-kat), the song of the Virgin Mary, Luke, i, 46-55; so called because it commences with this word in the Latin Vulgate. It is sung throughout the Western Church at vespers or evensong.

Magnifying-glass, a convex glass. See *Lens.*

Magnolia (mag-nō'li-a), a genus of trees and shrubs, type of the nat. order Magnoliaceæ; named from *Pierre Magnol,* a French botanist of the seventeenth century. The species, which chiefly inhabit North America, Northern India, China, Japan, and other parts of Asia, are trees much admired on account of the elegance of their flowers and foliage, and are in great request in gardens. In their native countries some of them attain great height, and have flow-

are 10 inches across. The bark of the root of *M. glauca*, or the beaver tree, is an important tonic. *M. tripetala*, or umbrella tree, has also tonic properties. The cones of *M. acuminata* yield a spirituous liquor, employed in Virginia in rheumatic affections. *M. grandiflora*, or big-laurel, and *M. conspicua* or *Yulan*, the yulan or Chinese magnolia, grow well in the south of England, and are splendid ornamental trees, being notable from flowering in spring before the leaves expand. The great flowered magnolia, or laurel bay, is a fine evergreen tree, 70 feet high, found in America, and bearing large, fragrant and beautiful flowers.

Magog. See *Gog and Magog.*

Magot. See *Barbary Ape.*

Magpie (mag'pi), a bird of the genus Pica, belonging to the Corvidæ or crow family. There are several species, two of which belong to America. The common European magpie (*P. caudata*) is about 18 inches in length; the plumage is black and white, the black glossed with green and purple; the bill is stout, and the tail is very long, whence its specific name *caudata*. The magpies continue in pairs throughout the year, and prey on a variety of food, chiefly animal. They are determined robbers of other birds' nests, destroying the eggs and young birds. In captivity they are celebrated for their crafty instincts, their power of imitating words, and their propensity to purloin and secrete glittering articles.

Magyars (ma-järz'), the Hungarians. See *Hungary.*

Mahaban (ma-ha-ban'), a decayed Indian town and place of pilgrimage, in Muttra district, North-western Provinces. Pop. 6182.

Mahâbhârata (ma-ha-bä'ra-ta; literally, the great history of the descendants of Bharata), an ancient Indian epic of about 220,000 lines, divided into eight books, the leading story of which narrates the history of the war between the 100 sons of Dhritarâshtra and their cousins, the five sons of Pandu, for the possession of the ancient kingdom of Bharata, which is said to have comprised the greater part of India. With its numerous extensive digressions and episodes, it forms a cyclopædia of Hindu mythology, legendary history and philosophy. The authorship is attributed to Vyâsa, 'the arranger,' but this simply means that the materials of which the poem consists were at some time or other welded together with a certain order and sequence so as to form one work, containing all that was needed to be known by an educated Hindu.

Mahadeva (ma-hä-dä'va; Skr.; literally, the great god), a name of Siva, one of the Indian deities, from which the sacred Ganges is fabled to have sprung.

Mahaffy (ma-haf'fi), JOHN PENTLAND, born in Switzerland in 1839; educated in Germany and latterly at Trinity College, Dublin, where he became a fellow in 1864, and was appointed professor of ancient history in 1871. He is author of *Lectures on Primitive Civilisation; Social Life in Greece from Homer to Menander; History of Classical Greek Literature; Problems of Greek History*, etc.

Mahan (ma-han'), ALFRED THAYER, naval officer and author, was born at West Point, New York, September 27, 1840. Graduating from the Naval Academy in 1859, he served through the Civil war and until 1896, retiring with the rank of captain. From 1886–89 he was president of the Naval War College. His notable work, *The Influence of Sea Power upon History*, attracted wide attention, and was followed by other works of great importance in naval history. In 1906 he was given the rank of rear-admiral. He died December 1, 1914.

Mahanadi River (ma-hä'na-dē; or MAHANUDDY), a river in Southern Hindustan which flows through the Central Provinces and Orissa, falling by several mouths into the Bay of Bengal, after a course of 520 miles. It has several large tributaries, and in connection with it is an extensive canal system. The Mahanadi itself has an estimated drainage area of 43,800 square miles and its rapid flow renders its maximum discharge in time of flood second to that of no other river in India.

Mahanoy City (mä-ha-noi'), a city of Schuylkill Co., Pennsylvania, 80 miles from Philadelphia, 13 miles N. N. E. of Pottsville, in the middle of a rich anthracite coal district. It has iron and other industries. Pop. 15,936.

Maharajah (ma-hä-rä'ja; literally, a great king), a title applied to an Indian rajah chief. The British have recognized these Maharajahs.

Mahatma (ma-hät'ma). This word signifies in Sanskrit 'great-souled one.' It is used by the Brahmans to designate a sage who has attained the highest point of spiritual enlightenment, and is in consequence possessed of magical powers.

Mahdi (mä'dē; Arabic, the guided one, a name assumed by

name of the successors of Mohammed, particularly applied to the twelfth imam, the lineal descendant of Mohammed, born A.D. 868. He mysteriously disappeared, being probably murdered by a rival, and the belief was that he would remain hidden until the 'last days,' when he would reappear, and at the head of the faithful spread Mohammedanism over the world. Many professed Mahdis have appeared from time to time in Africa as well as Asia, the latest being Mohammed Ahmed, the leader of the Soudanese insurrection (1883-85). He was born at Dongola in 1843; died in 1885. He studied Mohammedan theology at Khartoum and Berber, and at 25 years of age he retired to the island of Aba in the White Nile, where he lived in solitude for fifteen years. At the age of forty he took up the prophetic rôle, and his short victorious career began. He was succeeded by Khalifa Abdulla, whose army was completely defeated by General Kitchener in 1898, and the Mahdist rule in the Soudan brought to an end. See *Egypt, Soudan.*

Mahé (mä-hā'), an island in the Seychelles or Mahé Archipelago, in the Indian Ocean, about 17 miles long and 4 miles broad. It contains Port Victoria, the capital and headquarters of the British East African squadron.

Mahé, a French settlement, Southern India, within the limits of Malabar district, Madras presidency, 40 miles N. N. W. of Calicut, at the mouth of a small river of the same name. Formerly a place of considerable importance and trade. Pop. 10,298.

Mahmud (mä'mud), Sultan of Ghazna, the founder of the Mohammedan Empire in India, born at Ghazna about 970; died in 1030. His father, Sabaktagin, governor of Ghazna, owed a nominal allegiance to Persia, but was really independent. On his death Mahmud put aside his elder brother; formed an alliance against the Persian monarch, overthrew his kingdom and laid the foundation of an extensive empire in Central Asia (999). He then turned his attention to India, and in a series of twelve invasions secured a great amount of treasure, and vastly extended his power. He was a patron of literature, and brought many men of learning about his court, among whom was the poet Firdusi (which see). He established large educational institutions at Ghazna, and spent vast sums on public works. See *Ghaznevides.*

Mahmud I, Sultan of Turkey, born in 1696; reigned in 1730-50. —Mahmud II, Sultan of Turkey, born in 1785; died in 1839; placed on the throne by the Janizaries after the murder of his predecessor, in 1808. The chief events of his reign are the war with Russia from 1808 to 1812, which cost him Bessarabia and the provinces of Servia, Moldavia and Wallachia, as settled by the treaty of Bucharest; the war of Greek independence, which ended in the separation of that country, and the destruction of the Turkish fleet at Navarino, 1820-28; the extermination of the Janizaries, 1826; the treaty of Adrianople with the Russians, who were on the point of entering Constantinople, 1829; the independence of Egypt under Mehemet Ali, and the new treaty of Unkiar-Skelessi with the Russians, 1832-33.

Mahogany (ma-hog'a-ni), the wood of the *Swietenia mahogóni*, a lofty and beautiful tree, indigenous to Central America and the West Indies, belonging to the nat. order Cedrelaceæ. It grows most abundantly, and attains its greatest development between 10° N. lat. and the Tropic of Cancer. It reaches maturity in about 200 years, and grows to a height of 40 to 50 feet, diameter 6 to 12 feet. The wood is hard, compact, reddish-brown, and susceptible of a brilliant polish. It is one of best and most ornamental woods known, and is widely used in the making of furniture. It is imported chiefly from Mexico and British Honduras. That which is imported from the West Indies is called 'Spanish' mahogany, and is the most valued. *African mahogany* is the wood of *Swietenia senegalensis*, and is brought from Sierra Leone. *Indian mahogany* is the wood of *S. febrifuga* and *S. chlorosylon*, two large trees found in mountainous districts of India. *Ceylon mahogany* is the *Artocarpus integrifolia*, widely cultivated throughout the warm parts of Asia. *Australian mahogany* is the red gum (*Eucalyptus margenata*).

Mahogany (*Swietenia mahogóni*).

Mahomet. See *Mohammed.*

Mahon (mä'on), Lord. See *Stanhope, Philip Henry, Earl.*

Mahon. See *Port Mahon.*

Mahony (ma-hō'ni), Francis, known as 'Father Prout,' born at

Cork in 1804; died at Paris in 1866. He was educated at a Jesuit seminary at Amiens, studied theology at Paris, received clerical ordination, and officiated for a short time at the chapel of the Bavarian Legation, London. About 1834 he began the contribution of an amusing series of articles known as the *Prout Papers* to *Fraser's Magazine*. In 1846 he became Roman correspondent to the *Daily News*, his letters being afterwards republished under the title of *Facts and Figures from Italy*. For the last twelve or fifteen years of his life he was Paris correspondent for the *Globe*. *Reliques of Father Prout* was published in 1836 and 1860, and *Final Reliques* in 1876.

Mahrattas (ma-rat'as), a native Hindu race, said to have migrated from Northern India, who in the reign of Shah Jehan occupied a large tract of Central and Western India. They came into prominence about the middle of the seventeenth century, when the chief Sevaji, taking advantage of the weakness of the Moguls and the wars of Aurungzebe, extended his conquests in various directions, had himself crowned king in 1674, and established the Mahratta Empire. After his death long minorities and the incompetency of the sovereigns caused the powers of the state to fall into the hands of the *Peishwa* or prime minister, who became the acknowledged head of a Mahratta confederacy. This confederacy held together till 1795, but subsequent wars and disturbances reduced the Peishwa to the position of a British dependant, and Scindia, Holkar and the Rajah of Berar were able to take the position of independent sovereigns. The confederacy came to a final end in 1818, and Scindia, Holkar, the Guicowar of Baroda and the Rajah of Kolapore became dependent princes under British protection.

Mahsir, or MAHSUR (ma'sur), the principal game fish of India, a barbel (*Barbus mosal*), notable for its large scales. It is often over 100 pounds weight. It lives in the hill streams of the north, and is valued both for its gamey qualities and its delicate flesh.

Mai (mi), ANGELO, CARDINAL, an Italian scholar, born in 1782; died in 1854. In 1799 he entered the novitiate of the Society of Jesus, afterwards became a priest, and in 1808 obtained the post of librarian at the Ambrosian Library of Milan. In 1819 he became chief librarian of the Vatican, held the office of secretary of the Propaganda (1833-38), was created cardinal, and held several high offices in the church. Through his labors in the decipherment of palimpsests he recovered some fragments of the orations of Cicero and writings of Philo, Porphyry, and others. He rendered valuable services to the cause of scholarship.

Maia (mā'ya), in Greek mythology, one of the Pleiades, the daughter of Atlas and mother of Hermes (Mercury).

Maidenhair (mā'den-hār), the name given to the *Adiantum Capillus-veneris*, an elegant fern with a creeping scaly rhizome, and bipinnate fronds, the leaflets of which are between rhomboidal and wedge-shaped, margined with oblong sori, and more or less deeply lobed. It is found in the United States and throughout the Eastern hemisphere, and possesses demulcent and mucilaginous properties.

Maidenhair-tree, the *Salisburia adiantifolia*, a deciduous tree of the yew family, a native of Japan, so called from the likeness of its leaves to the maidenhair fern.

Maidenhead (mā-den-hed), a municipal borough, England, in the county of Berks, 12 miles E. N. E. from Reading, near the right bank of the Thames. Its first charter dates from the reign of Edward III. Pop. (1911) 15,218.

Maiden-plum, the name of two West Indian plants, *Comocladia integrifolia* and *C. dentata*, belonging to the nat. order Anacardiaceæ. They yield a milky juice which, on exposure to air, becomes an indelible black dye.

Maid of Norway, Margaret, the daughter of Eric, king of Norway, and Margaret, the daughter of Alexander III of Scotland. On the death of Alexander she was acknowledged queen of Scotland, and was betrothed to Edward, son of Edward I of England, but died on her passage to England in 1290.

Maid of Orleans. See *Joan of Arc*.

Maids of Honor. See *Honor, Maids of*.

Maidstone (mād'stun), a municipal and parliamentary borough of England, county of Kent, 32 miles S. S. E. from London, on the banks of the Medway, here crossed by a handsome bridge completed in 1879. There is a fine old church, one of the largest parochial buildings in the kingdom, supposed to be of the fourteenth century. Paper is largely manufactured in the vicinity, and an extensive trade is carried on in fruit and hops. Pop. (1911) 35,477.

Maigre (mā'gĕr), an acanthopterygious fish of the genus *Sciæna*; more particularly the *S. aquila*, much sought after as a food fish. It is common in the Mediterranean and the Eastern Atlantic, and is a strong, powerful fish, often measuring 6 feet in length. It is remarkable for making a sort of whirring noise as it moves through the water.

Mail, Coat of. *See Arms and Armor.*

Mail-coaches. *See Coach.*

Mailed Cheeks, a name given to the Sclerogenidæ or Triglidæ, a family of acanthopterygious fishes, from their having certain bones of the head and gill-covers enlarged to form a defense for the cheeks. Gurnards and bullheads are members of this family.

Maimachin, Maimatchin (mī-ma-shēn'), a trading town of Mongolia, adjoining the Russian emporium of Kiachta.

Maimansingh (mī-mun-sing'), a British district in the Dacca division, Bengal; area, 6287 square miles. It is for the most part level and open, and is well cultivated. Rice and jute are among the chief agricultural products. The Jumna and the Brahmaputra are the chief rivers, and the administrative headquarters are at Nasirabad.

Maimonides (mī-mon'i-dēs), properly *Moses Ben Maimon Ben Joseph*, a Jewish scholar, born at Cordova about 1131-39; died about 1201-09. He received an excellent education, studied Jewish and Arabic literature and Greek philosophy, attended the lectures of the Arabic philosophers, and made himself acquainted with the healing art. Driven from Spain by persecution, he ultimately settled at Old Cairo, where he attained the highest place in the estimation of his co-religionists; became physician to the Sultan of Egypt and superintendent of the Jewish communions. He systematized the whole mass of Jewish tradition, and demonstrated the principles on which Judaism is based. His books were widely circulated in Europe by means of Latin translations. His best writings in Arabic are the *Guide of the Erring*, an exposition of Judaism; a *Compendium of Logic;* a *Commentary on the Mishna;* an *Exposition of the 613 Laws of Moses*, etc. He wrote in Hebrew a complete system of the *Talmudic Judaism.*

Main (mān), a river of Germany, which rises in the Fichtelgebirge, flows in a generally westerly direction for a distance of 300 miles, and joins the Rhine a little above the town of Mainz. It is navigable for about 200 miles, and has recently been improved so as to admit the largest Rhine steamers to Frankfort. By means of King Ludwig's canal it affords through navigation to the Danube. The chief tributaries are the Regnitz and Tauber on the left bank, and the Franconian Saale on the right.

Maine (mān), one of the eastern and maritime States of the United States, bounded on the east and northeast by New Brunswick, north and northwest by Quebec, west by New Hampshire, and south by the Atlantic Ocean; area, 33,040 square miles. It is mostly an elevated country, but hilly rather than mountainous. The highest peak, Mount Katahdin, has an elevation of 5200 feet. The State is almost completely traversed by navigable rivers, the principal of which are the Penobscot and Kennebec; and in the interior are numerous lakes. The coast abounds with islands, the largest of which is Mount Desert, 15 miles long and 12 miles broad; and is indented with numerous bays and inlets, the principal of which are Penobscot, Casco and Passamaquoddy. Grass lands are extensive, and Indian corn, potatoes, wheat, barley, rye, flax and hay are the chief crops. Many thousands of cases of sweet corn are packed yearly, and oats of superior quality are grown. Many horses and cattle are kept, and the wool-clip is large and of good quality. The leading industry is the production of lumber. Not long ago the forests covered about one-half the surface of the State, but they are rapidly diminishing. The white pine, once the most important lumber product, has largely vanished, but the woodlands which still cover 30 per cent. of the area of the State, are being carefully managed, and yield a large product. The manufacture of paper and pulp is important. Slate, limestone and clay are abundant. Iron ore, lead, copper and gold are found in small quantities, but are not so rich as to prompt large mining orperations. The fisheries give employment to a large portion of the population; and other industries are shipbuilding, the manufacture of cotton and woolen fabrics, paper, etc. There are about 2100 miles of railways, and lines of steamers ply regularly from the larger ports. Augusta, on the Kennebec, is the seat of government, but Portland is the principal town, and a seaport of great importance. The Maine prohibitory liquor laws date from 1846. In their present form they forbid the manufacture for sale of all intoxicating liquors.

No person is allowed to sell intoxicating liquors for drinking purposes. Maine is advancing industrially, commercially and agriculturally, and is widely known for its summer resort attractions. Augusta, on the Kennebec, is the seat of government, but Portland is the largest city and a seaport of much importance. Pop. (1910) 742,871.

Maine, The, United States battleship, sunk from an explosion in Havana harbor, Cuba, Feb. 15, 1898; 258 of its crew of 363 being killed, and 9 reported missing. This disaster filled the nation with horror and consternation. It occurred when the relations between Spain and the United States were strained and was the main cause of the war that followed, a court of inquiry holding the vessel had been blown up intentionally. The wreck was raised and sunk outside the harbor in 1912.

Maine, an ancient province of France, lying immediately s. of Normandy, and comprising the modern departments of Sarthe, Mayenne, and parts of Orne and Eure-et-Loir. It was part of the French dominions of Henry II of England, and was wrested from John by Philip Augustus.

Maine, Sir Henry James Sumner, an English jurist, born in 1822; was graduated at Pembroke College, Cambridge, in 1842. He was appointed regius professor of civil law in the same university in 1847, and reader on jurisprudence at the Middle Temple in 1854. From 1862 to 1869 he was law member of the Supreme Council of India, and on his return home he was elected Corpus professor of jurisprudence at Oxford. In 1877 he became Master of Trinity Hall, Cambridge. His works are of great value and include *Ancient Law in Connection with the Early History of Society; Village Communities in the East and West; The Early History of Institutions; Dissertations on Early Law and Custom*, and the *Whewell Lectures on International Law*. He died in 1888.

Maine-et-Loire (mān-e-lwär), a western department of France; area, 2750 square miles. It has a gently-undulating surface, the slopes of which are generally covered with vines, while the plains are of great fertility. About one-half of the entire area is arable. Some of the white wines produced are much esteemed. The Loire traverses it almost centrally, east to west, and receives within the department the Maine, formed by the united streams of the Loire, Sarthe and Mayenne. The manufacture of cotton, linen and woolen tissues is important. Pop. 513,490.

Maine Liquor Law. See under *Maine*.

Mainpuri (min-pu'rē), a district and town of British India, Agra division, Northwestern Provinces. Area of district, 1697 square miles; pop. 801,216.—Mainpuri, the capital of the district on the Agra branch of the Grand Trunk Road, has a pop. of about 19,000.

Maintenance, Cap of. See *Cap*.

Maintenon (man-tē-nōn), Françoise D'Aubigné, Marchioness de, wife of Louis XIV, and granddaughter of Henry the Fourth's friend Theodore Agrippa D'Aubigné, was born in 1635, in the prison of Niort in Poitou, where her father, a profligate adventurer, was then confined. Left quite destitute on his death in her tenth year, Mademoiselle D'Aubigné spent her youth in dependence on her rich relatives, and was glad to contract a nominal marriage with the famous Paul Scarron, a deformed, old and infirm man. Her beauty, liveliness and propriety of conduct gained for her powerful friends among those who frequented her husband's house; and on Scarron's death she was entrusted with the charge of the children born to Louis XIV by Madame de Montespan. She assumed this office in 1669, and played her cards so dexterously that the king married her privately, probably in 1685, when her age was fifty and his own forty-seven. For the remaining years of his life she was his most confidential adviser. She was a virtuous woman, and a devout and bigoted Catholic, ambitious and resolute, but disinterested and charitable. Her published letters give her a creditable place in French literature. She died in 1719, at the nunnery or school of Saint Cyr, which she herself had founded.

Mainz (mints; English, *Mentz*; French, *Mayence*), a fortified town of Germany, in the grand-duchy of Hesse, finely situated on the left bank of the Rhine, opposite the mouth of the Main, 20 miles w. s. w. Frankfort. The Rhine is here crossed by a bridge connecting Mainz with the small town of Castel, which is within the system of fortifications. There is also a railway bridge. The older part of the town has been mostly modernized since the destruction caused by a powder-magazine explosion in 1857, and an extensive new quarter has been added since the recent widening of the fortified circuit. Among the more interesting buildings are the cathedral (recently restored), a vast building of red sandstone, finished in the fourteenth century, adorned with several

finely painted windows, frescoes, and a great number of ancient and curious monuments; the former electoral palace, now containing the city library (150,000 vols.), picture gallery, museum, etc.; the old collegiate church of St. Stephen, a fine specimen of Gothic architecture; the grand-ducal castle; the courts of justice; the government buildings; the town hall, a new renaissance structure; the theater, central railway station, Gutenberg's house and other buildings associated with the invention of printing, etc. There is a fine statue of Gutenberg by Thorwaldsen. The handsome new quay, about 880 feet in breadth, along the Rhine, affords a pleasant promenade; and there are several docks. The manufactures embrace leather, furniture, hardware, carriages, tobacco, beer, chemicals, musical instruments, etc. The trade, particularly transit, is extensive. Mainz was for long the first ecclesiastical city of the German Empire, of which its archbishop-elector ranked as the premier prince. Its history during the sixteenth century is of considerable interest in connection with the progress of the Reformation. Pop. (1910) 113,245.

Maiolica (mä-yol'i-kä). See *Faience.*

Mair, JOHN. See *Major.*

Maire, LE, STRAITS OF, a channel between Terra del Fuego and Staten Island, named from a Dutch pilot who discovered it in 1616.

Maisonneuve (mä-sō-nëv), a city of Quebec province, Canada. Pop. (1911) 18,684.

Maistre (mä-tr or mäs-tr), JOSEPH MARIE, COMTE DE, an Italian statesman and polemical writer, born at Chambéry in 1754; died at Turin in 1821. In 1803 he was sent as ambassador to St. Petersburg, returning to Turin in 1817, when he became a member of the Sardinian ministry. He was a reactionary in politics, religion and philosophy, a supporter of absolute monarchy, and of the infallibility of the pope. His principal writings are *Du Pape, De l'Eglise Gallicane,* and the *Soirées de St. Petersburg.*—His younger brother, XAVIER DE MAISTRE, born at Chambéry in 1763; died at St. Petersburg in 1852; is chiefly famous for his *Voyage autour de ma Chambre,* a delightful work.

Maitland (mät'land), a town in New South Wales, 95 miles north of Sydney, on the Hunter River. It comprises two distinct municipalities, East Maitland and West Maitland, separated from each other by Wallis Creek, over which is an excellent bridge. It is situated in the midst of a very fertile agricultural district, and coal of excellent quality and great quantity is found in the neighborhood. The industries comprise coach-building, brewing, boot-making, etc. Population of East and West Maitland 10,214.

Maitland, JOHN. See *Lauderdale.*

Maitland, SIR RICHARD (Lord Lethington), a Scottish poet, lawyer, and statesman, born in 1496; died in 1586. He studied at St. Andrews and in France, and on his return to Scotland, was employed in various commissions by James V, and afterwards by the Regent Arran and Mary of Guise. He collected the decisions of the Court of Session from September, 1550, to July, 1565, and made a celebrated collection of early Scottish poetry. His own verses, chiefly satirical, were printed by the Maitland Club in 1830.

Maitland, WILLIAM, commonly known as Secretary Lethington, a Scottish statesman, eldest son of Sir Richard Maitland, born about 1525; died in 1573. He early adopted the reformed doctrines, and was one of the first public men openly to renounce the mass. In 1558 he was appointed secretary of state by Mary of Guise. In the following year he joined the Lords of the Congregation, who had taken possession of Edinburgh. In 1560 he was speaker of the parliament which abolished the authority of the pope in Scotland. On Queen Mary's arrival in Scotland he was chosen one of her principal ministers, and was continually employed as her envoy to the English court. After Darnley's murder he conspired to effect Mary's escape from Lochleven; yet he attended the coronation of James VI, and fought against her at Langside. The regent Moray, suspecting him of being at the bottom of the intrigues in favor of Mary both in England and Scotland, had him arrested in 1569 as an accessory to Darnley's murder. He was set at liberty by Kirkcaldy of Grange, and after the assassination of Moray he became the life and soul of the queen's party, and kept up an active correspondence with Mary. In 1571 he joined Kirkcaldy in Edinburgh Castle; was proclaimed a traitor by the parliament, and attainted with his two brothers. On the surrender of Edinburgh Castle, Kirkcaldy and his brother were hanged, but Maitland died in prison in Leith, presumably by his own hand.

Maize (mäs; Sp. *maiz,* from Haytian *mahis,* the native name of the plant), Indian corn, a prominent species

of a genus of plants found in the warmer parts of the world, where it answers a purpose similar to that of wheat in more northern countries. The common maize or Indian corn is the *Zea Mays* of botanists, a monœcious grass, of vigorous growth, with stems not more than 2 feet high in some varieties, and reaching the height of 8 or even 10 feet in others. The grains are large, compressed, and packed closely in regular parallel rows along the sides of a receptacle many inches long. In large varieties the ear or *cob* is often 1 foot long and 3 inches in thickness. Maize is extensively cultivated in the United States, being known as corn, and the crop at times

Maize (*Zea Mays*).

has reached the vast amount of 3,000,000,000 bushels annually. Its flour, though very nourishing, is not glutinous, and is usually mixed with wheat, rye, or other flour before it is baked. It is largely used in the United States for making cakes and bread of various kinds, the favorite brown bread of New England being made from a mixture of corn and rye meal. The tender variety known as sugar-corn is, when boiled, a favorite table vegetable. It is largely kept for winter use by canning. In America, large quantities of this grain are roasted till they split, and are then eaten under the name of *pop-corn*. From the green stems a juice is expressed, which unfermented gives a pleasant syrup, and fermented is converted into an excellent spirit. Paper has been made from maize fibers. The pith of the stem has been used as a packing for the sides of war vessels, it swelling when wet so as to prevent the flow of water through holes made by artillery. Maize is also cultivated throughout a great part of Asia and Africa, and in several countries of the south of Europe, as Spain, Italy and Roumania. The green stems and leaves form nutritious food for cattle, and in Great Britain it is sown and cut green for this purpose. *Z. Curagua*, a smaller species, is the Chile maize or Valparaiso corn.

Majolica, or MAIOLICA. See *Faience*.

Major (mā'jur), in the army, is a field officer next in rank above a captain and below a lieutenant-colonel. His duties are to superintend the exercises of the regiment or battalion, to carry out the orders of his superior officers, and to command in the absence of the lieutenant-colonel.

Major, in music, designates in general a larger in contradistinction to a smaller interval of the same denomination, called a *minor* interval; thus a *major tone* is the interval between two tones having the proportion to each other in number of vibrations of 8:9; a *minor tone* the interval between two tones in the ratio of 9:10; a major third is an interval of two tones (major and minor); a minor third an interval of a tone and semitone. The *major mode* is one of the two recognized modern modes (or forms of the scale), in which the first third in the scale is a major third, in contradistinction to the *minor mode*, in which the first third is regarded as a minor third.

Major, CHARLES ('Edwin Caskoden'), an American author, born at Indianapolis, Indiana, July 25, 1856; died February 13, 1913. He practiced law at Shelbyville. His historical novel, *When Knighthood Was in Flower* (1898) won instant success. This was followed by others, including *Dorothy Vernon of Haddon Hall* (1902), *A Forest Hearth* (1903), and *Yolanda, Maid of Burgundy* (1905).

Majorca (ma-jōr'ka; Spanish, *Mallorca*), an island in the Mediterranean belonging to Spain, the largest of the Balearic group, between Iviça and Minorca; greatest length, 55 miles; greatest breadth, 45 miles; area, 1420 square miles. It is very irregular in shape, and deeply indented. The coasts on the west and north, facing Spain, are lofty and steep; in other directions, and particularly on the east, they are low and shelving. The island is generally fertile, producing, besides large crops of cereals, hemp, flax, silk and saffron. Fruits abound; the pastures are rich, and maintain large numbers of cattle; and the fisheries on the coasts are valuable. It is traversed by

several railways. Chief town, Palma. Pop. 248,191.

Majority (ma-jor'i-ti), in law, is the period of full age, at which the laws of a country permit a young person to manage his own affairs. In the United States, as well as in most other countries, the age of majority is twenty-one years.

Makaroff (mak'a-rof), STEPAN OSIPOVICH, a Russian admiral, born in 1848. He served with conspicuous courage in the Russo-Turkish war of 1877-78. From 1891-94 he served as admiral and inspector-in-chief of naval artillery, and designed the famous ice-breaking steamer *Ermak*. He was given command of the fleet at Port Arthur in the war with Japan, and on April 13, 1904, was one of the 600 who perished from the blowing up, by the Japanese, of the battleship *Petropavlosk*.

Makart (ma-kart'), HANS, a German painter, born at Salzburg in 1840; died in 1884. He studied at Vienna and Munich, and latterly settled at Vienna. He was a great colorist, but was deficient in conception and drawing. Among his chief works are: *A Trilogy of Modern Amorettes; The Seven Deadly Sins; The Dream of a Man of Pleasure; The Gifts of Sea and Earth; Leda;* and *The Entrance of Charles V into Antwerp.*

Maki (ma'ki), a name applied to some of the lemurs.

Makó (mo'kō), or MAKOVIA, a town of Hungary, on the right bank of the Maros, 22 miles east by south of Szegedin. It has pastoral, agricultural and fishing interests and a number of oil mills. Pop. 33,722.

Makololo (ma-ko-lō'lo), a large and once powerful tribe in South Africa, between lat. 13° and 20° S. The Makololos attained considerable eminence during Livingstone's time, but shortly after 1864 the kingdom was broken up.

Makrizi (ma-krē'zē), ABU AHMAD MOHAMMED, AL, an Arabic writer, born in 1360; died in 1442. He wrote an *Historical and Topographical Description of Egypt*, a *History of Saladin*, a *Treatise on Moslem Coins*, etc.

Malabar (mal-a-bär'), a maritime district of British India, in the presidency of Madras, on the west coast; area, 5765 square miles; length, 145 miles; breadth, varying from 25 miles on the N. to 70 miles on the S. A great portion is comparatively low, intersected by narrow ravines, covered with forests and jungle, and watered by innumerable streams. Tea and coffee plantations have been successfully established. The principal towns are Cananor, Tellicherry and Calicut. Pop. 6,029,304. The name Malabar is often applied to the whole extent of coast country as far north as Bombay.

Malabar Leaf, the leaf of the *Cinnamōmum malabathrum* of Malabar, formerly used in European medicine.

Malabar Plum, a tree and its fruit, the *Eugenia Jambos*, nat. order Myrtaceæ. It grows plentifully on the Malabar coast, and its fruit is much esteemed. Called also *Rose-apple*.

Malacca (ma-lak'a), a territory and town forming part of the British colony of the Straits Settlements, on the west coast of the Malay Peninsula, on the Strait of Malacca. It extends about 40 miles along the shore of the strait, and about 25 miles inland. Area, 875 sq. miles. The sea-coast is rocky, and the interior in some parts mountainous, with picturesque and fertile valleys intervening. Tapioca and rice are the chief products. The district contains deposits of gold and tin. Malacca is ruled by a resident councilor subject to the governor of the Straits Settlements. The town is one of the oldest European settlements in the East, being founded by the Portuguese in 1509. It was acquired from the Dutch in 1825. Its trade and importance are now slight. Pop. of town and territory 124,081.

Malacca, STRAIT OF, the channel between the Malay Peninsula and the Island of Sumatra, extending from latitude 1° to about 6° N. Entire length, about 520 miles; breadth, varying from 25 miles to 200 miles.

Malacca Bean, the fruit of the *Semecarpus Anacardium*, or marking-nut tree of India, belonging to the nat. order Anacardiaceæ. It closely resembles the cashewnut.

Malacca Cane, a cane made from the wing-leaved, erect, slender, cane-stemmed palm *Calamus scipiōnum*, which, when dressed, is of a brown color, sometimes mottled or clouded. It is brought from Singapore and Malacca, but is chiefly produced in Sumatra.

Malachi (mal'a-kī), the twelfth and last of the minor prophets. Nothing is known of the history of the writer, and it is even doubtful if Malachi ('Messenger of Jehovah') be a proper name or an assumed epithet. The book evidently belongs to the latter part of the governorship of Nehemiah, about B.C. 420. It contains denunciations of the sins of the Israelites, and predicts the

coming of the Messiah and the conversion of the Gentiles.

Malachite (mal'a-kīt), a carbonate of copper, of a dark emerald-green color, and of a laminated, fibrous, or massive structure. The finest specimens are obtained from Siberia, but it is found in many places all over the world. Fibrous malachite, when finely pulverized, is used as a paint; massive malachite is made into boxes, knife-handles, table-slabs, and other ornamental articles, and is susceptible of a beautiful polish. Blue malachite or azurite contains a larger proportion of carbonic acid.

Malacology (mal-a-kol'o-ji), the science of molluscous or soft-bodied animals.

Malacopteri, MALACOPTERYGII (mal-a-k o p-t ē r-i j'i-i), a name given to those osseous fishes which are distinguished by all the rays of the fins being soft (except in a few individuals), exhibiting minute articulations, and often divided into small fibers at their extremities. They are divided into two suborders, the Malacopteri (proper) and the Anacanthini. They include the carp, salmon, pike, herring, cod, turbot and other flat fish, and the eels. See *Ichthyology*.

Malacostraca (mal-a-kos'tra-ka), a subclass of crustaceans divided into two primary groups, sessile-eyed and stalk-eyed, and including the shrimps, lobsters, crabs, etc., together with the wood-lice, sandhoppers, etc.

Malaga (mal'a-ga), a seaport of southern Spain, in Andalusia, capital of a province of the same name, on the Mediterranean. It was anciently called *Malaca;* was a flourishing city under the Romans, and its long occupation by the Moors has left distinct marks in the older parts of the town; the Gibralfaro, or Moorish castle, on a hill overlooking the town, and considerable portions of the ancient fortifications yet remaining. Among the important buildings are the cathedral, a highly decorated structure in the composite style, with a spire 300 feet high; the Episcopal palace, custom house, and several hospitals and charitable institutions, etc. The manufactures consist chiefly of iron, the ore of which is obtained from rich mines in the vicinity; soap, cottons, linens, machinery, etc. The trade is of much more importance, the principal exports being olive oil, lead in bars, wine and fruit, particularly raisins, oranges, and almonds. The climate is one of the mildest and most equal in Europe. Pop. 130,109. —The province of Malaga has an area of 2822 sq. miles; pop. 511,989. It is traversed in all directions by offsets of the Sierra Nevada. The valleys are fertile and generally well cultivated, yielding cereals, grapes, oranges, lemons, figs, almonds, sugar-cane, etc.

Malaga Wine, a sweet Spanish wine produced in the province of Malaga. It is one of the 'muscatel' wines, and is rich, luscious and full of body.

Malaguetta-pepper. See *Grains of Paradise.*

Malakoff, DUC DE. See *Pelissier.*

Malambo-bark (m a-l a m'bō), the bark of some species of *Galipea*, tropical American shrubs of the nat. order Rutaceæ, used as a substitute for cinchona.

Mälar, MALAREN. See *Maelar.*

Malaria (ma-lā'ri-a), a class of diseases, among which intermittent and remittent fevers occupy a prominent place, that have been known from a very early period to be especially prevalent in marshy districts, where they seem promoted at particular seasons by certain conditions of heat and moisture. It has long been supposed that these results were due to noxious emanations, the product of vegetable decomposition. It has recently been discovered, however, that the malarial affections are due to the action of a microbe or disease germ, which infects mosquitoes and are injected into human blood by their bite. This has been proved by persons who exposed themselves to the vapors of the Campagna and other malarious localities, but protected themselves from mosquito bites. Under these circumstances they were immune from malaria. The knowledge of this fact is likely to prove of great value in guarding against malarial diseases. Among the districts of Europe infected with malaria the Campagna di Roma (which see) is by far the most notable.

Malatesta (ma-la-tes'ta), a distinguished Italian family, the chief branch of which were lords of Rimini from 1295 to 1526, and were celebrated for the active share they took in the stirring events of that period.

Malay Archipelago (m ā - l ā'), also known as the INDIAN, ASIATIC, or EASTERN, the great group of islands situated to the southeast of Asia, and washed on the west by the Indian and east by the Pacific Ocean. The archipelago may roughly be said to lie between the meridians of 95° and 135° E., and the parallels of 11°

s. and 17°N. Within these limits lie some of the largest and finest islands in the world, as Borneo, Sumatra, Java, Celebes, the Philippines, etc., but New Guinea is not ranked as belonging to the group. The chief of the smaller islands are the Moluccas or Spice Islands, Billiton, Banca, Madura, Bali, Lombok, Sumbawa, Flores, Timor. The small islands are exceedingly numerous. The islands are generally fertile and covered with a luxuriant vegetation, and they produce all kinds of tropical products in abundance. Many of them contain volcanoes. As regards their fauna and flora they may be divided into two main groups, those east of the Strait of Macassar and the channel between Bali and Lombok having more affinities with Australia, while the others are rather Asiatic in character. The chief native race is the Malayan. A large portion of the archipelago is really or nominally under the sway of Holland, and this portion is frequently called the Dutch East Indies. See separate articles on the principal islands or groups.

Malay Peninsula, the most southern part of continental Asia, the long narrow projection that stretches first S. and then S.E. from Siam and Burmah. It is connected with Lower Siam by the Isthmus of Kra, has on the E. the Gulf of Siam and the China Sea, and on the W. the Strait of Malacca. It varies in width from 45 miles at the N. to about 210 miles. The area is about 70,000 sq. miles, and the population is variously estimated at from 1,000,000 to 2,000,000, including large numbers of Chinese. The country is mountainous, with peaks of from 5000 to 9000 feet high; it is densely wooded; rivers numerous but short; minerals important, more especially tin, which is found in great quantity and largely exported. Politically the peninsula, with the exception of the British territories of Penang and Malacca, is divided among a number of more or less independent chiefs tributary to or in treaty with Siam and Britain. The native races are Siamese, Malays and Negritos.

Malays, the name of a race of people inhabiting the Malay peninsula, and spread over all the Asiatic Archipelago. They claim to have had their native country in the Highlands of Sumatra, where they established the once powerful state of Menangkabo, now subject to the Dutch. In physical appearance they are rather under the middle height, light-brown in color, with black straight hair, high cheek bones, black and slightly oblique eyes, and scanty or no beard. The civilized Malays profess the Mohammedan religion. They are said to be of a taciturn undemonstrative disposition; naturally indolent, treacherous in their alliances and addicted to piracy. When under excitement or passion they are often seized with the 'amok' fever, when they indiscriminately cut down with great ferocity every one they meet. The Malay language is agglutinative in character, and is very extensively used as that of literature and commerce. See *Ethnology*.

Malcolm I (mal'kum), King of Scotland, reigned from 943 to 954.—MALCOLM II succeeded Kenneth II in 1005. In his reign Lothian and Strathclyde became parts of the Scottish kingdom. He was assassinated at Glamis in 1034. He was the last direct male descendant of Kenneth MacAlpine.—MALCOLM III, surnamed *Canmore* (Great Head), born about 1024. After the murder of his father, Duncan, by Macbeth, he sought aid from Siward of Northumbria, and his cause was also espoused by Edward the Confessor. On the defeat and death of Macbeth he was crowned at Scone in 1058. In 1068 he granted asylum to Edgar Atheling, his mother, and two sisters (one of whom, Margaret, he married in 1070), with a number of Saxon exiles. His reign, which was mostly taken up with wars with England, had nevertheless an important bearing on the civilization and consolidation of Scotland.—MALCOLM IV (the Maiden) succeeded his grandfather, David I, in 1153. He surrendered Northumberland and Cumberland to Henry II in 1157. Died at Jedburgh in 1165, at the age of twenty-four.

Malcolm, SIR JOHN, a distinguished soldier and diplomatist, was born near Langholm, in Dumfriesshire, 1769; died in London in 1833. He entered in 1782, as a cadet, the service of the East India Company. In 1797 he was made captain; and from that time to 1799 he was engaged in a variety of important services, terminating at the fall of Seringapatam. He was three times ambassador to Persia, and did excellent service in the pacification of India after the wars of Holkar and the Peishwa. In 1822 he was made major-general, and received a grant of £1000 per year from the East India Company. In 1827 he was appointed governor of Bombay, which post he continued to fill until 1831, when he finally returned to Britain. He received the honor of knighthood in 1812. As an author his principal works are: *A Sketch of the Sikhs; The History of Persia; Sketches of Per-*

sia; A Memoir of Central India; a *Life of Lord Clive*, etc.

Malden (mal'den), a city of Massachusetts, in Middlesex county, on the Malden River, 5 miles N. of Boston. It has beautiful parks and residences and manufactures of rubber boots and shoes, cords and tassels, emery paper, fire hose, chemicals, etc. Pop. 48,000.

Malden Island, a small island of coral formation in the Pacific; lat. 3° S. lon. 155° W. It belongs to Britain and produces guano.

Maldive Islands (mal'dīv), a remarkable chain of islands in the Indian Ocean, extending from lat. 0° 40′ S. to 7° 6′ N., nearly on the meridian of 73° 30′ E., and composed of seventeen clusters of atolls. The larger islands are richly clothed with wood, chiefly palm, and are fertile in fruit and in various kinds of edible roots; they also produce millet, and abound in cocoanuts, fowls, and all descriptions of fish. The inhabitants carry on a considerable trade with Bengal, Ceylon and the Malabar coast, extending also to the Red Sea and to Sumatra. They are governed by a sultan, who resides in the island of Male or Mohl, and pays annual tribute to the British government in Ceylon. Pop. about 30,000.

Maldon (mal'dun), a municipal borough and river port of England, county of Essex, 36 miles northeast of London, on the Blackwater estuary, near the mouth of the Chelmer. It has a fine old church dating from 1056, an interesting old town hall and a grammar school dating from the reign of Edward VI. Its industries are salt-crystallizing, iron-founding and oyster-fishing. Pop. 6253.

Malebranche (mal-brānsh), NICOLAS, a French philosopher, born in 1638; died in 1715. He studied theology and philosophy at the colleges of La Marche and of the Sorbonne, and at the age of twenty-two he was admitted into the congregation of the oratory. In 1673 he published his treatise *De la Recherche de la Vérité.* The doctrines of this celebrated work are founded upon Cartesian principles. Among his other writings are *Conversations Métaphysiques et Chrétiennes; Traité de la Nature et de la Grace; Méditations Métaphysiques et Chrétiennes; Traité de Morale*, etc.

Male-fern, the *Nephrodium* or *Lastrea Filix-mas*, a handsome fern common throughout the temperate part of the northern hemisphere, with large fronds rising from a short erect caudex. Its rhizome and root-stalk have anthelmintic properties, and are used for the expulsion of tapeworms.

Malesherbes (mal-serb), CHRÉTIEN GUILLAUME DE LAMOIGNON DE, a French statesman, the son of Guillaume de Lamoignon, chancellor of France, was born at Paris in 1721. After studying at the Jesuits' college he qualified himself for the legal profession, and became a counselor of the parliament of Paris. He passed through several grades of office, and was in 1750 made president of the Court of Aids. His functions were suspended by the temporary abolition of the parliament in the reign of Louis XV, and were restored with its revival under Louis XVI. He held office along with Turgot, and resigned on his retirement. Aided by Tronchet and Desèze he acted as leading counsel for Louis XVI. Acts of loyalty far less decided were in that day the sure road to destruction. He was condemned to death, and guillotined on April 22, 1794. He was the author of a few miscellaneous treatises.

Malherbe (mal-erb), FRANÇOIS DE, a French poet, born at Caen in 1555; died in 1628. He was the protégé of Henry IV; wrote light lyrics, odes, epigrams, etc.; and so far as form is concerned he may be considered the father of French classics' poetry.

Malibran (mà-lē-brāṇ), MARIA FELICITA, one of the greatest singers of modern times, born at Paris in 1808, the daughter of a well-known singer and singing master, Manuel Garcia. She made her début in 1825 at the opera in London, and the following year went to New York, where she married M. Malibran, a French banker, from whom she soon separated. She returned to Europe, where her splendid vocal powers and dramatic ability made her an extraordinary favorite in Britain and on the Continent. Having obtained a divorce from her first husband, she married the violinist De Bériot in 1836, but died the same year.

Malic Acid (mal'ik; $C_4H_6O_5$), a bibasic acid found in many fruits, particularly in the apple, hence the name, from L. *malum*. It is most easily obtained from the fruit of *Pyrus Aucuparia* (mountain-ash or rowan tree), immediately after it has turned red, but while still unripe. It is very soluble in water, and has a pleasant acid taste.

Malice (mal'is), in law, a formed design or intention of doing mischief to another, called also *malice prepense* or *aforethought*. It is express when the formed design is evidenced by certain circumstances discovering such

intention; and *implied* when the act is done in such a deliberate manner that the law presumes malice, though no particular enmity can be proved. *Malicious mischief* is the committing of an injury to public or private property from sheer wantonness or malice. This offense is punishable with great severity. Intent is the material ingredient in offenses of this nature; but as the law presumes malice in the very commission of the act, it lies on the party indicted to rebut the presumption of malice, or sufficiently explain the act. A *malicious prosecution* is a prosecution brought against a person maliciously and without reasonable cause. From the mere want of probable cause malice may be inferred.

Malignants (ma-lig'nants), in English history, a name applied by the parliamentary party during the civil war to describe the king's evil advisers; the name came to be afterwards given to all who supported the king against the parliament.

Malines (mȧ-lēn). See *Mechlin*.

Mallard. See *Duck*.

Malleability (mal-e-a-bil'i-ti), the property of being susceptible of extension by beating; almost restricted to metals. The following is the order of malleability of the metals:—Gold, silver, copper, platinum, iron, aluminium, tin, zinc, lead, cadmium, nickel, cobalt. Ductility and malleability are nearly allied, but they are seldom possessed in the same proportion by the same metal.

Malleus (mal'ē-us), one of the bones of the ear. See *Ear*.

Mallock (mal'ok), WILLIAM HURRELL, was born in Devonshire, England, in 1849, his mother being a sister of Froude, the historian. He was educated privately and at Balliol College, Oxford, where he gained the Newdigate for a poem on the *Isthmus of Suez*. He is a frequent writer on political and social subjects in the magazines, and has published *The New Republic; The New Paul and Virginia; Is Life Worth Living?; A Romance of the Nineteenth Century; The Old Order Changes*, a novel; etc.

Mallow (mal'ō; *Malva*), a genus of plants of the natural order Malvaceæ. *M. sylvestris* (the common mallow) is a common and widely diffused species, possessed of mucilaginous properties. The whole plant is used officinally in fomentations, cataplasms and emollient enemas. When fresh the flowers are reddish-purple, but on drying become blue, and yield their coloring principle both to water and alcohol. The alcoholic tincture furnishes one of the most delicate of reagents for testing the presence of alkalies or acids. The dwarf mallow (*M. rotundifolia*) and musk mallow (*M. moschāta*) are also found in Britain. The fiber of *M. crispa* is sufficiently tenacious to be used in making cordage. Mallow has been naturalized in the United States.

Common Mallow (*Malva sylvestris*).

Malmaison (mal-mā-son), a historic chateau in France, department of the Seine, 5 miles W. of Paris, once the property of Richelieu. It was the favorite residence of the Empress Josephine, wife of Napoleon I.

Malmedy (mäl'me-dē), a town of Rhenish Prussia, about 24 miles south of Aix-la-Chapelle, on the Warche in a basin surrounded by hills; manufactures of sole-leather, paper, etc. Pop. 4680.

Malmesbury (mämz'be-ri), a town of England, county of Wilts, on an eminence, 23 miles N. E. of Bristol. It is well built, and has the remains of an abbey founded in the sixth century. Pop. (1911) 2657.

Malmesbury, JAMES HARRIS, EARL OF, son of James Harris, the author of *Hermes*, born in 1746; died in 1820. His diplomatic career, dating from 1768, was a brilliant success, and earned him the reward of an earldom in 1800. His *Diaries* and *Correspondence* were published in 1844, his *Letters* in 1870.—His grandson, JAMES HOWARD, third earl, born in 1807, has been foreign secretary and keeper of the privy seal. He published *Memoirs of an Ex-Minister* in 1884.

Malmesbury, WILLIAM OF, an English historian, born probably in Somersetshire about the year 1075; died about 1143. He received his education at the Benedictine Abbey of Malmesbury, and subsequently became librarian and precentor of the abbey. His *De Gestis Regum Anglorum* is a general history of England, from the arrival of the Saxons in 449 to 1128; he also wrote a history from that year to 1143; *De Gestis Pontificum Anglorum; Antiquities of Glastonbury;* etc. All his works are

highly esteemed as trustworthy chronicles.

Malmö (mäl'mes), a seaport of Sweden, capital of the laen or prefecture of Malmöhus, situated on the eastern shore of the Sound, opposite Copenhagen. The manufactures and other industries are considerable, and the shipping trade of the port is large. Pop. (1912) 92,338.

Malmsey Wine (mam'zi), is a sweet wine obtained from a grape originally brought from Malvasia or Malvoisie in the Morea. It is made in the Azores, the Lipari Islands, Teneriffe, Sardinia, Sicily, but more especially in Madeira, from grapes that have been allowed to shrivel on the vine.

Malo (mä'lō), St., a fortified seaport of northwest France, department of Ille-et-Vilaine, on a rocky island communicating with the mainland by a long causeway. It has a commodious and secure harbor formed by the mouth of the Rance, the island, and causeway. Pop. 9122.

Malone (ma-lōn'), a city of Franklin County, New York, 57 miles w. by s. of Rouse's Point. It has iron, woolen, paper, flour, and pulp mills, broom factories, etc. Pop. 6467.

Malone, Edmund, a commentator and editor of Shakespere, was born at Dublin in 1741; died in 1812. He was called to the London bar in 1767, but devoted himself entirely to literary pursuits. He published an edition of Shakespere with suggestive notes, in 1790; *Remarks on the Rowley* (Chatterton) *Controversy; an Inquiry into the Ireland Shakesperean Forgeries;* biographical memoirs of Sir Joshua Reynolds, Dryden, W. Gerard, Hamilton, etc.

Malory (mal'o-ri), Sir Thomas, born probably about 1430. His compilation, *The Most Ancient and Famous History of the Renowned Prince Arthur*, based on the romances of *Merlin*, *Lancelot*, *Tristram*, the *Quest of the Graal*, and the *Mort d'Arthur*, was first printed by Caxton in 1485. Malory is supposed to have been a Welshman, but all that is known of him is that he was a knight, and finished the book about 1470. The work is one of the most celebrated of mediæval productions.

Malot, Hector Henri, a French novelist, born near Rouen in 1830; died in 1907. He lived in London as a newspaper correspondent and wrote numerous novels, including the autobiographical *Le Roman de mes Romans.*

Malpighi (mäl-pē'gē), Marcello, an Italian physician and anatomist, born in 1628; died in 1694. He was successively professor of medicine at Bologna, Pisa and Messina. In 1691 he became physician to Pope Innocent XII. His works relate to anatomy, physiology and vegetable anatomy.

Malpighia (mal-pē'gi-a), named after Marcello Malpighi, a genus of plants, the type of the nat. order Malpighiaceæ. The species are small trees or shrubs, with opposite shortly-stalked leaves and axillary and terminal fascicles or corymbs of white or red flowers. The fruit of one species (*Malpighia urens*) is the Barbadoes cherry of the West Indies.

Malpighian Bodies and Corpuscles, in anatomy, certain small round bodies in the cortical substance of the kidney and in the spleen. See *Kidney* and *Spleen.*

Malplaquet (mäl-plä-kā), a village in the French department of Nord, on the Belgian frontier, 20 miles s. e. of Valenciennes, celebrated for the defeat of the French under Villars by the allied British and Austrian troops under Marlborough and Prince Eugene, September 11, 1709.

Malt (malt), grain, usually barley, steeped in water and made to germinate, the starch of the grain being thus converted into saccharine matter, after which it is dried in a kiln, and then used in the brewing of porter, ale, or beer, and in whisky distilling. One hundred parts of barley yield about ninety-two parts of air-dried malt. See *Brewing.*

Malta (mal'ta; anciently *Melita*), an island in the Mediterranean belonging to Britain, 62 miles s. s. w. of Sicily, and 197 miles n. of Africa; length, northwest to southeast, 17 miles; central breadth, about 9 miles; area, 98 square miles, to which the adjoining islands of Gozo and Comino add 24. It is of an irregular oval shape, deeply indented on all sides except the south, where the coast forms a continuous and almost unbroken line. The most important indentation is the double bay on which the capital, Valetta, stands. The greatest elevation of the island is about 750 feet. There are only a few small streams, but the springs are so numerous and copious that no deficiency of water is felt. An extensive series of water-works, including reservoirs for irrigation, have recently been constructed. The soil is thin, and rests on a calcareous rock; in some parts earth has been brought from Sicily and put down. Corn, cotton, potatoes and clover are the chief crops. Both the vine and olive are

cultivated, and fruit, particularly figs and oranges, is very abundant. The manufactures consist of cotton goods, lace, jewelry, etc. The central position of Malta in the Mediterranean makes Valetta an invaluable naval station. It has, in consequence, been provided with excellent docks and very strong fortifications. The climate is very hot in summer, but pleasant and healthy in winter, attracting many visitors at this season. Malta passed successively through the hands of the Phœnicians, Greeks, and Carthaginians, and was finally attached to Rome during the second Punic war. After the fall of the Roman Empire it was seized at different times by Vandals, Goths, and Saracens. From the last it passed to Sicily, and followed its fortunes till 1522, when Charles V. granted it to the order of St. John of Jerusalem, the knights of which defended it successfully against a tremendous siege by the Turks in 1565. In 1798 the grand-master surrendered it without defense to Napoleon. It was taken by the British in 1800, and finally annexed by them in 1814. The executive government is in the hands of a governor and council. By a new constitution adopted in 1888 the legislative council consists of the governor and the members of council (6), with 14 members elected by the constituencies into which Malta and the islands of Gozo and Comino have been divided. The people are mainly of Arabic race and speak a kind of Arabic mixed with Italian. Italian and English are also spoken. The educational institutions include a university, a lyceum, two secondary schools, besides primary and infant schools. Besides the capital Valetta and the Three Cities adjoining, there are several considerable towns or villages. The total population, inclusive of the garrison (about 5000) 206,690.

Malte-Brun (mält-brûn), geographer, properly MALTHE KONRAD BRUUN, born at Thisted, Jutland, in 1775; died at Paris in 1826. His liberal political opinions caused his banishment from Denmark, and he became a French citizen about 1800. His geographical works include: *Géographie Mathématique, Physique et Politique; Tableau de la Pologne; Précis de la Géographie Universelle*, etc.

Maltese Cross. See *Cross.*

Maltese Dog (mal-tēz'), a very small kind of spaniel, with long silky, generally white hair and round muzzle. They are lively and good-tempered, and make agreeable pets.

Maltha (mal'tha), a variety of bitumen, viscid and tenacious, like pitch. It is unctuous to the touch, and exhales a bituminous odor.

Malthus (mal'thus), THOMAS ROBERT, an English political economist, born in 1766; died in 1834. He studied at Jesus College, Cambridge, became fellow of his college, took orders and held a small living in Surrey. In 1805 he was appointed professor of history and political economy in the East India Company's College at Haileybury, an office which he held till his death. In 1798 he first published the views with which his name is associated in his *Essay on the Principles of Population as it Affects the Future Improvement of Society.* It was improved and matured in subsequent editions. His leading principle is that population, when unchecked, goes on increasing in a higher ratio than the means of subsistence can, under the most favorable circumstances, be made to increase; that the great natural checks to excessive increase of population are vice, misery, and moral restraint; and the great business of the enlightened legislator is to diminish the first two and give every encouragement to the last. Besides the *Essay* Malthus wrote various pamphlets and works of temporary interest.

His theory has been strongly debated and opposed, and so far the facts do not accord with it, whatever the future may disclose.

Malton (mal'tun), a town of England, county of York, 16 miles northeast of the city of that name, on the right bank of the Derwent. There are some large breweries, and also foundries, agricultural implement works, etc. Till 1885 it returned a member to Parliament. Pop. (1911) 4822.

Malva. See *Mallow.*

Malvaceæ (mal-vā'se-ē), the mallows, a large nat. order of exogenous plants, having polypetalous flowers, monadelphous stamens, unilocular anthers, valvate estivation, and often an external calyx (epicalyx) or involucre. A large proportion of the order consists of herbaceous or annual plants, inhabiting all the milder parts of the world, but found most plentifully in hot countries. Several species are of essential service to man. As emollients they are well known in medical practice. The hairy covering of the seeds of the various species of *Gossypium* forms raw cotton. The inner bark of many species yields fiber of considerable value. Many species of *Althæa*, *Sida* and *Hibiscus* are splendid flowering plants. See *Mallow.*

Malvasia (mal-vā'shi-a), the Italian *Napoli di Malvasia*, a great fortress and commercial center of the Levant during the middle ages; now a small town with about 1000 inhabitants on the eastern shore of the Morea.

Malvern (mal'vern), Great, a fashionable watering place and health resort of England, county of Worcester, 8 miles s. w. of the city of Worcester, on the eastern slope of the Malvern Hills. It is irregularly built, but is surrounded by beautiful villas and handsome mansions, and has large and handsome hydropathic establishments, a fine church, etc. Malvern College is a flourishing proprietary institution on the plan of the great public schools. Pop. (1911) 16,514.

Malvern Hills, a range of England, on the borders of Worcester and Hereford shires. It extends north and south for about 9 miles, and attains an altitude of 1395 feet.

Malwan (mäl'wän), a town of India, Bombay, on an island off the coast, 210 miles s. of Bombay. Pop. about 17,000.

Mamaroneck (ma-mar'o-nek), a town of Westchester Co., New York, on Long Island Sound, 20 miles eastward from New York City. It is a residence place for New Yorkers and has many elegant villas. Pop. 5699.

Mamelukes, or Mamalukes (mam'a-lūks; Arabic, 'slaves'), the former mounted soldiery of Egypt, consisting originally of Circassian slaves. As early as 1254 they became so powerful that they made one of their own number sultan, this dynasty continuing till 1517, when it was overthrown by Selim I. They still, however, continued to be virtual masters of the country. They suffered severely in opposing the French at the end of the eighteenth century, and in 1811 Mehemet Ali caused a general massacre of them throughout Egypt.

Mammalia (mam-mā'lya; Latin, *mamma*, a breast), the highest class at once of the Vertebrata and of the animal kingdom, including those warm-blooded animals we familiarly term 'quadrupeds,' the whales and other fish-like forms, and man himself. Their distinctive characteristic is that the female suckles the young on a secretion peculiar to the class, furnished by the mammary glands of the mother, and known as milk. The skin is always more or less covered with hairs, which are found in many forms, from the finest wool or silky down to large coarse bristles and even spines. The skeleton exhibits a uniformity of essential structure, and in most points agrees with that of man. The cavity of the thorax or chest is bounded by the ribs, which vary greatly in number, but generally correspond to that of the dorsal vertebræ. The skull forms a single piece composed of bones immovably fastened together, to which is articulated the lower jaw, composed of two halves united at the chin. The skull is joined to the spine by means of two condyles which fit into the first cervical vertebra. The limbs, like those of all other Vertebrata, are never more than four. The front

Digestive System of a Mammal.

g, Gullet or œsophagus; *s*, stomach; *sm*, small intestine; *lm*, Large intestine; *r*, Large intestine terminating in the rectum.

limbs are invariably present, but in cetaceans and such allied forms as the dugongs and manatees the hinder limbs are either completely suppressed or present only in a rudimentary state. The limbs are generally well developed, and are most commonly adapted for terrestrial progression; some are suited for burrowing, others for climbing, those of the cetaceans and seals for swimming, while some (the bats) have the forelimbs developed into a kind of wing. Teeth are present in most mammals; but they are only represented in the embryo in the whalebone whales, and are entirely absent in the ant-eater, pangolin, and echidna. The teeth are lodged in *alveoli* or sockets, and are not ossified to the jaw-bones as in lower forms. Mammals which have only a single set of teeth throughout life are termed *monophyodont;* those who have the first set of teeth (milk or deciduous teeth) replaced by a second set of permanent teeth are called *diphyodont*. The teeth are referable to four groups, which differ in form, position, and function: *incisors*, *canines*, *premolars* and *molars*. The chest or thorax in all mammals is separated from the abdominal cavity by a complete *diaphragm* or 'midriff,' which thus constitutes a great muscular partition between these cavities, and also forms the most important agent in effecting the movements of the chest during respiration. Within the thorax the heart and lungs are contained; while the abdomen and its lesser pelvic cavity contain the organs relating generally to digestion, excretion, and reproduction. The stomach, generally simple, may, as in some monkeys, in the kangaroos, in the pig, and most of all in the ruminants, exhibit a division into compartments. A liver and pancreas are present in all Mammalia. The lungs agree in essential structure with those of man, as also does the heart with its four chambers—right and left auricles and right and left ventricles. The red corpuscles of the blood are *non-nucleated*, and are circular in shape except in the case of the camels. All mammals with the exception of the monotremes are viviparous, but there are considerable differences in the relations subsisting between mother and young before birth, thus leading to the division into placental and aplacental mammals. (See *Placenta.*) Man and all other mammals except the monotremes and marsupials belong to the former division. All mammals possess mammary or milk glands, which, however, may differ chiefly in number and position throughout the class. (See *Mammary Glands.*) In the *classification* of this important group authorities differ somewhat, but the mammals may be divided into the following groups:—Man (Hominidæ); Apes and Monkeys (Simiæ); the Prosimians or Lemurs (Prosimii); the Bats (Chiroptera); the Insect-eaters (Insectivora); the Flesh-eaters (Carnivora); the Seals (Pinnipedia); the Whales and Dolphins (Cetacea); the Sea-cows (Sirenia); the Elephants (Proboscidea); the Odd-toed Ungulates (Perissodactyla); the Even-toed Ungulates (Artiodactyla); the Gnawers or Rodents (Rodentia); the Edentates (Edentata); the Marsupials, or Pouch-bearing Mammals (Marsupialia); and the Molotremes (Monotremata).

Diagram of the Circulation in a Mammal.

(The cavities containing venous blood are marked black, those containing arterial blood are left white). *a*, Right auricle; *v*, right ventricle; *p*, pulmonary artery carrying venous blood to the lungs; *pv*, pulmonary veins carrying arterial blood from the lungs; *a'*, left auricle; *v*, left ventricle; *b*, aorta carrying arterial blood to the body; *c'*, vena cava, carrying venous blood to the heart.

Mammary Glands (mam'a-ri), the milk-producing organs, the distinctive mark of the mammals. These structures present in man an essentially *lobular* structure. The lobes are divisible into smaller *lobules*, which consist ultimately of groups of vesicles which open into minute ducts converging into larger channels which lead to the milk reservoirs at the nipple. The nipple itself is composed of unstriped muscular fibers and areolar tissue. It also possesses erectile powers, and blood-vessels are in consequence freely distributed to it. These glands, save in exceptional instances, are undeveloped in the male. They are always in pairs on some part of the ventral surface of the body, but in number and position they vary much in the various groups.

Mammee Tree (ma-mē'), or West India Apricot

(*Mammea Americana*), nat. order Guttiferæ, a tall, handsome tree bearing a fruit about the size of a cocoanut. This has two rinds enclosing the pulp, which is firm, bright yellow, and has a pleasant taste and smell. The seeds, which are large, are used as anthelmintics, and a

Mammoth (*Elephas primigenius*).

gum distilled from the bark is used to destroy chigoes.

Mammon (mam'un), a Syriac word used in St. Matthew as a personation of riches or worldliness. There does not appear to have been any idol in the East receiving divine honors under this name.

Mammoth (mam'uth), a species of extinct elephant, the fossil remains of which are found in European, Asiatic, and North American formations. Geologically speaking, the mammoth, or *Elephas primigenius*, dates from the Post-pliocene period. It survived the glacial period, and lived into the earlier portion of the human period; its remains having been frequently found associated with human remains, and its figure carved on bone. It appears to have been widely distributed over the northern hemisphere, but never south of a line drawn through the Pyrenees, the Alps, the northern shores of the Caspian, Lake Baikal, Kamchatka and the Stanovoi Mountains. It had large curved tusks and shaggy hair. The bones and tusks have been found in great abundance in Siberia; and an entire carcass which had been preserved in the ice and eventually thawed out, was discovered towards the close of the eighteenth century on the banks of the river Lena, in such a perfect state that the flesh was eaten by dogs, wolves and bears. Its skin was perfectly preserved, and was seen to be clothed with a furry wool of reddish color, interspersed with black hairs. The skeleton and other parts of this animal are preserved in the St. Petersburg Royal Museum. It must have been twice as bulky as the elephants at present living. Other examples have since been found.

St. Petersburg Mammoth.

Mammoth Cave, a stupendous cave in Kentucky, near Green River, about 80 miles s. s. w. of Louisville. It is one of a large series of vast caverns here formed in the limestone rock, and which are found over an area of 6000 miles in Kentucky, Tennessee and Indiana. It has been penetrated 14 miles, and has many windings and offshoots, some of them but imperfectly explored. It is a dry cave, and the remains of its stalactite and stalagmite formations are dusty and dilapidated; consequently it is more remarkable for its extent, the size of its halls, and height of its domes, than for the variety or beauty of its scenery. It contains several small lakes or rivers, the largest, Echo River, being more than half a mile long. It rises and falls according as Green River is in flood or otherwise, there being an underground connection between them. The animals of the cave include blind wingless grasshoppers, beetles, rats, etc., and the viviparous blind fish Amblyopsis.

Mammoth Trees. See *Sequoia*.

Man, the most highly organized member of the animal world. The endeavor has often been made in classification to separate man from the brute creation. One system, expressing a vast gap between the Quadrumana and man, classifies man in the order Bimana ('two-handed'), the highest division of the Mammalian class; and relegates the monkeys and apes to the lower and distinct order—that of the Quadrumana ('four-

handed'). The more recent arrangements, however, classify man and the monkeys in one order, making man the highest family or group of this order. From the purely anatomical point of view the differences which separate the anthropoid apes from man are in some respects less than those which separate these higher apes from apes lower in the scale. But the mental or psychical endowments of man oblige us to remove him far above the highest Quadrumana; and even the characters by which he is anatomically separated from the highest apes form a well marked and appreciable series. The first special characteristic of man is his erect position and bipedal progression. The lower limbs, with the feet broad and plantigrade and the well-developed heel, are devoted exclusively to progression and supporting the weight of the body; while the upper limbs have nothing to do with progression, but subserve prehension entirely. The bones of the face in man do not project forwards, but they are elongated in a downward direction; the face and forehead in the more civilised races being situated very nearly in the same plane. Similarly the development of a distinct chin is also a peculiarly human feature, and one which in the highest varieties of mankind becomes most marked. The great cranial capacity of man, or the greater size of the cranial or brain portion as compared with the facial portion of the skull, forms another noteworthy and distinctive character of the human form. The brain convolutions also are more numerous and complex than is the case with any other mammal. The teeth of man are arranged in a continuous series, and without any *diastème* or interval. The development of hair also is very partial. The gorilla presents of all the apes the nearest approach to the human type taken in its entirety; but it differs in the relative number of vertebræ (13 dorsal and 4 lumbar, to 12 and 5 respectively in man), in the order of dental succession and in the presence of the interval or diastema, in the less prominent muscular development of the buttocks and calves, and in other minor differences. The orangs most closely approach man's structure in the number of ribs and in the form of the cerebrum, while they exhibit the greatest differences from him in the relative length of the limbs. The chimpanzees are most anthropoid in the shape of the cranium, in the arrangement and succession of the teeth, and in the length of the arms as compared with that of the legs. Of the higher apes the gibbons are those furthest removed from the human type of structure. Chief among the psychical features, or rather among the results of the operation of the principle of mind, we note the possession of the moral sense of right and wrong. The possession of an articulate language, by which he can communicate his thoughts, is also the exclusive possession of man, and draws a sharp line of separation between him and all other animals. With regard to the geological history of man, the earliest traces yet discovered belong to the Post-pliocene deposits in conjunction with existing species of shells and some extinct species of mammals. Man's advent upon the earth is consequently referred to a period much anterior to that which former limits and theological ideas prescribed. Among the modern theories regarding the origin of man may be noted those of (1) Darwin: that man is directly descended from an extinct form of anthropoid ape, with a tail and pointed ears, arboreal in its habits and an inhabitant of the Old World; further, that man has diverged into different races or subspecies, but that all the races agree in so many unimportant details of structure, and in so many mental peculiarities, that they can be accounted for only through inheritance from a common progenitor. (2) Wallace also affirms the original unity of man, and places him apart as not only the head and culminating point of the grand series of organic nature, but as, in some degree, a new and distinct order of being; maintaining that a superior intelligence has guided the development of man in a definite direction and for a special purpose, just as man guides the development of many animal and vegetable forms. (3) Carl Vogt holds a plurality of the race; adopts Darwin's idea of natural selection accounting for the origin and endowments of man, but rejects Wallace's idea of the higher controlling intelligence. (4) Mivart propounds a theory of a natural evolution of man as to his body, combined with a supernatural creation as to his soul. See also *Ethnology*, *Anthropology*, *Anthropometry*, etc.

Man, Isle of, an island in the Irish Sea, equidistant about 27 miles from England and Ireland, and 16 miles from Scotland; greatest length, N. E. to S. W., 33 miles; greatest breadth, E. to W., 12 miles; area, 227 sq. miles. There is a small island, the Calf of Man (800 acres), at the S. W. extremity of Man. A range of hills extends throughout nearly the entire length of the island, culminating in Snaefell (2024 feet). Lead and zinc are found in considerable quantities, especially the former. Fishing is

an important industry, but the manufactures are almost entirely domestic. The island is governed by an independent legislature called the Tynwald, consisting of two branches—the Governor and Council and the House of Keys. Two judges or 'deemsters' try civil and criminal cases. The Manx language, a Celtic dialect, is still in use, although all the inhabitants speak English. The principal towns are Douglas, Castletown, Peel and Ramsey. This island was taken by the Norwegians in 1098, sold to the Scots in 1266, and was repeatedly occupied by the English and Scots up till 1344, when it remained in possession of the former. It was later held as a feudal sovereignty by the earls of Derby, and more recently by the dukes of Athole, from whom it was purchased for the British crown in 1764 for £70,000; and finally, in 1829, certain remaining privileges were ceded by the duke on receiving an award of £416,000. Pop. (1911) 52,034.

Manaar (man-a-är'), GULF OF, a part of the Indian Ocean between Ceylon and Hindustan, separated from Palk's Strait by a reef called Adam's Bridge, which runs between the two islands of Manaar (18 miles by 2½ miles) and Ramisseram. The gulf is noted for its pearl fisheries.

Manacor (mä-na-kōr'), a town of Spain, in the island of Majorca. Pop. 12,408.

Managua (mä-nä'-gwä), a town in Central America, capital of the state of Nicaragua, near the southwest shore of the lake of same name, 32 miles s. s. w. of Leon. Pop., with the district, about 30,000.—The lake, about 38 miles long and 16 broad, discharges itself into that of Nicaragua.

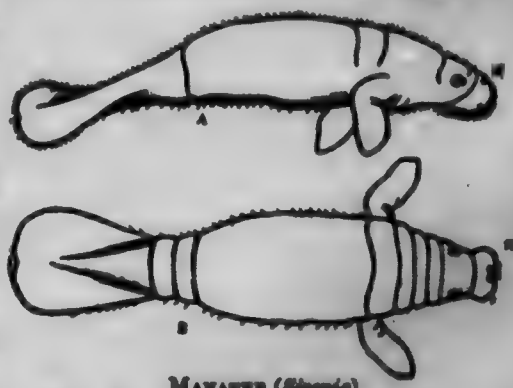
Manakin (man'a-kin), the name given to the dentirostral insessorial birds forming the subfamily Piprinæ. They are generally small and of brilliant plumage, and are mostly confined to South America, a few species being found in Central America and Mexico. The typical genus is *Pipra*, which includes the bearded manakin (*P. Manăcus*), and several others. An allied species is the beautiful orange manakin or cock-of-the-rock (*Rupicŏla aurantia*).

Manáos (mä-nä'oosh), a town of Brazil, capital of province Amazonas, on the Rio Negro. It has a large export trade in India rubber, cacao, dried fish, Brazil nuts, etc. Pop. 40,000.

Manassas. See *Bull Run*.

Manasseh (ma-nas'se), (1) eldest son of Joseph, born in Egypt. His descendants formed a tribe, which, in the Promised Land, was settled half east of the Jordan and half to the west of this river. (2) King of Judah, son of Hezekiah, whom he succeeded at twelve years of age, 697 B.C. He became an open idolater; was taken captive to Babylon; ultimately repented and was restored to his kingdom. He reigned for fifty-five years.

Manatee (man-a-tē'), the sea-cow or lamantin, a gregarious aquatic mammal of the genus *Manātus*, order Sirenia, found on the coasts of



MANATEE (*Sirenia*).

A, Side view of young *Manātus Americānus*. B, Same from above. n, Nostrils.

South America, Africa, and Australia. They generally frequent the mouths of rivers and estuaries, and feed on algæ and such littoral land vegetation as they can reach at high tide. Their anterior limbs or swimming paws are furnished with nails, by means of which they drag themselves along the shore. They are large awkward animals, attaining a length of 8 to 10 feet as a rule, but sometimes growing to 20 feet. The skin is of a grayish color, sparsely covered with hairs. Their flesh is excellent, and they furnish a soft, clear oil which does not become rancid. There are several species, the principal being the American manatee (*M. Americānus*), which inhabits the shallow waters of the east coasts of South and North America, and the African manatee (*M. Senegalensis*). The dugong (which see) belongs to the same order.

Manby (man'bi), CAPTAIN GEORGE WILLIAM, born in Norfolk in 1765; died in 1854. About 1808 he invented the apparatus known by his name for saving life from shipwrecked vessels near the coast, and was rewarded with about £7000. See *Life-rockets*.

Mancha, LA (lä-män'chä), an ancient province of Spain, in New

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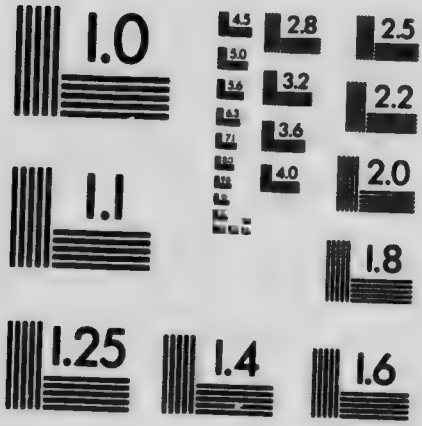

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Castile, forming the chief part of the modern province of Ciudad-Real; famous as the scene of Don Quixote's adventures.

Manche (mänsh), La, a department of Northern France, bounded on the W., N., and N. E. by the English Channel, and landward by the departments of Calvados, Orne and Mayenne. It is about 80 miles long by 30 broad, and has an area of 2263 sq. miles. Pop. (1906) 487,443.

Manchester (man'ches-tèr), a town of Hartford Co., Connecticut, 9 miles E. N. E. of Hartford. Its manufactures include silks, paper, woolens, friction clutches, marine engines, reverse gears, underwear, electric clocks, needles, soap, etc. Pop. 13,641.

Manchester, a district of Chesterfield Co., Virginia, on the James River, opposite Richmond. It has coal-mining interests and manufactures of cotton, iron, paper, nails, flour, tobacco, etc. Pop. 7594.

Manchester, a city, one of the county seats of Hillsborough Co., New Hampshire, situated at the Amoskeag Falls of the Merrimack River, 53 miles by rail north of Boston, one of the most important manufacturing cities in New England, with extensive water power; its cotton and woolen mills employing 15,000 operatives and producing 260,000,000 yards annually, and its shoe factories employing 8000 hands, and producing 15,000,000 pairs annually. It is the centre of six steam and four electric railroads. Pop. 70,063.

Manchester, a municipal and parliamentary borough and city of Lancashire, England, 188 miles N. N. W. from London by railway, and 32 miles east by north of Liverpool. The old town of Manchester proper, and the large and populous townships of Hulme, Chorlton, Ardwick, Cheetham, etc., are situated on the east or left bank of the Irwell, while the extensive borough of Salford is situated on the right bank; but communication by a dozen bridges serves to make them practically one city. The Manchester charter of incorporation dates from 1838; in 1832 it was made a parliamentary borough, and in 1852 it became a city. It has many important and handsome public buildings and many fine streets. The center of the town is largely occupied by immense piles of warehouses and offices, while the factories and other manufacturing works are chiefly in the outskirts. Among the chief public buildings are the town hall or municipal buildings in the Gothic style, finished in 1877 at a cost of £1,053,264; the Assize Courts, also a fine specimen of modern Gothic, behind them being a well-arranged prison; the Royal Exchange; the Royal Infirmary; the old town-hall, in which the Free Reference Library is now located; the Free Trade Hall, used for public meetings; the Royal Institution, etc. Among the churches the first place is due to the cathedral, a fine specimen of Perpendicular Gothic, built in 1422; but the soft stone of which it is built having necessitated numerous re-

Manchester—The Royal Infirmary and Piccadilly, from the Queen's Hotel.

pairs, the edifice has a comparatively new appearance. The chief educational institution is Owens College, the nucleus of the Victoria University, founded in 1846 by a bequest of upwards of £100,000 from John Owens. (See *Owens College.*) Cheetham's Hospital was founded under the will of Humfrey Cheetham in 1653 for the education of poor boys. Attached to the institution is a library of nearly 40,000 volumes, the first free library in Europe. The city has also a number of denominational colleges—the Lancashire Independent College, the Primitive Methodist College, St. Bede's Roman Catholic College, etc. The Grammar School was founded in 1520, and has exhibitions at Oxford or Cambridge. There are numerous literary, scientific and philosophical societies, some of them of considerable standing. The Free Library, established in 1851, has a reference library in the main building of 200,000 volumes, and six branches with upwards of 100,000 volumes. Benevolent and charitable institutions are numerous. For open-air recreation there are the botanical and horticultural garden; the Queen's Alexandra and Philip's parks; the Belle Vue zoological gardens; and Peel Park, Salford, with an excellent museum, and covering an area of 40 acres. Among the public monuments the most noteworthy is the Albert Memorial in front of the town hall. The chief manufacture is cotton, though woolen and silk fabrics are also produced. Metal manufactures, engineering, and the making of all kinds of machinery employ many hands. Railway communication is of the most extensive kind, the largest stations being Victoria, London Road, Exchange and Central. The commerce of the town has been much facilitated and extended by the completion of the Liverpool and Manchester ship canal, opened January 1, 1894. Its length is 35½ miles; its width at water level being 172 feet, at bottom 120 feet; depth 26 feet; dock accommodation 133 acres. The manufacture of gas, supply of water, working of tramways, etc., are directly or indirectly in the hands of the corporation, and an extensive scheme is being proceeded with for bringing an improved water supply from Thirlmere in the Lake District.—Manchester is the *Mancunium* of the Romans. Its history is legendary down to the tenth century, when it was devastated by the Danes. In the twelfth century the woolen manufactures began to develop, and in 1301 it received municipal liberties and privileges. During the civil war the town suffered much at the hands of both parties. The introduction of machinery in cotton-spinning towards the end of the eighteenth century gave power and direction to the trade of modern Manchester, and its progress since has been extraordinarily rapid. A temporary check resulted from the Civil war in America, which led to a cotton famine in 1862, causing the deepest distress in South Lancashire. Pop. of Manchester, (1911) 714,427; of Salford, 231,380.

Manchester Party or School, the name given to an English political party whose exertions were particularly directed to the development and thorough carrying out of the principles of free trade. They had their chief seat in Manchester, and Messrs. Cobden and Bright were the principal leaders. From their advocating non-intervention in foreign affairs, of arbitration instead of war, etc., they were sometimes called the 'peace-at-any-price' party.

Manchineel (man'ki-nēl), a lofty tree (*Hippomāne Mancinella*) belonging to the natural order Euphorbiaceæ. It is a native of the West India Islands and Central America, and is valuable for cabinet work. It possesses poisonous properties, which, however, have been greatly exaggerated. The milky juice when dropped upon the skin produces a sensation of severe burning, followed by a blister.

Manchuria, or MANCHOOKIA (man-chō'ri-a; Chinese *Shing-King*), a Chinese territory occupying the northeastern section of the empire. It is bounded on the north and east by the Amur or Amoor and Usuri, which separate it from Russian territory; on the west by the provinces of Irkutsk, Mongolia and Chih-le; on the south by the Gulf of Leaotong, the Yellow Sea and Corea. It is divided into three provinces, Shing-King, Feng-Tien, or Leaotong in the south, of which Mukden is the capital; Kirin in the center, with a capital of the same name; and He-Lung-Kiang in the north, with capital Tsitsihar. On the southern extremity of the peninsula is the historically famous harbor of Port Arthur. The total area is about 360,000 sq. miles. The Manchus are a hardy race, and their country has long been the great recruiting ground for the Chinese army; but of late years large numbers of Chinese proper have flocked into it, so that now they by far outnumber the native race. In the seventeenth century the Manchus invaded China and placed their leader's son upon the throne. From that time until February, 1912, the Manchu dynasty continued to reign in China, the Manchu language becoming

the court and official language. The country is mountainous, but on the whole fertile. The climate is good, for though the winters are severe they are healthy and bracing. The vast forests of the north are rich in useful timber of all kinds. The principal food crops are pulse, millet, barley and wheat. The vine, indigo, cotton, opium, tobacco, etc., are cultivated. In 1898 Russia obtained from China a lease of the harbors of Port Arthur and Tal-lien-wan, at the latter of which the city of Dalny was built. The encroachments of Russia in Manchuria led in 1904 to a disastrous war with Japan, the armies of the latter capturing Port Arthur, Dalny and Mukden. By the terms of the treaty of 1905 Russia agreed to withdraw from Manchuria, while Japan restored that country to China. The Chinese revolution of 1911-12 overthrew the Manchu dynasty in China, and a republican government succeeded the empire.

Manchus, or MANCHOOS. See preceding article.

Mandalay (man'da-lā'), the capital of Burmah from 1860 to its annexation by India in 1886. It is situated in a level plain about 2 miles from the left bank of the Irrawaddy. It consists of four concentric quadrangles, of which under native rule the innermost contained the palace, etc.; the second, which was surrounded by a moat and walls, contained the houses of the government officials, soldiers, etc.; while outside dwelt the general body of the people. Since the British occupation the town has suffered severely from fires and floods. Pop. (1911) 138,299.

Mandamus (man-dā'mus), in law, a command or writ issuing from a superior court, directed to any person, corporation, or inferior court, requiring them to do some act therein specified which appertains to their office and duty, as to admit a person to an office or franchise, or to deliver papers, etc.

Mandarin (man'da-rin), the term applied by Europeans to government officials of every grade in China. The Chinese equivalent is *kwan*, which signifies literally a public character.

Mandarin Duck, a beautiful species of duck (*Anas* or *Dendronessa galericulata*) from Eastern Asia, the males of which exhibit a highly variegated plumage of green, purple, white and chestnut, the females being colored a more sober brown. The male loses his fine plumage in summer.

Mandats (mäṇ-dä'), a kind of paper money issued during the French revolution, differing from the *assignats* (which see) insofar as specific pieces of property, enumerated in a table, were pledged for the redemption of the bills, while the assignats furnished only a *general* claim.

Mandavi. See *Mandvi*.

Mandelay. See *Mandalay*.

Mandeville (man'de-vil), BERNARD, poet and philosophical writer, born in Holland about 1670; died in 1733. His most celebrated production is the *Fable of the Bees, or Private Vices Public Benefits*, the first part of which appeared in 1723, and the second in 1728. It created quite a sensation, and called forth replies from Bishop Berkeley, William Law, and others. Among his other works are *Free Thoughts on Religion* (1720), and *Origin of Honor* (1732).

Mandeville, SIR JOHN DE, the name adopted by the compiler of an extraordinary book of travels originally written in French between 1357 and 1371. An English version was made from the French MS. about the beginning of the fifteenth century. That part of the book which treats of the Holy Land may be a record of the author's experience, but the greater part is taken from the travels of the friar Odoric, written in 1330, and other sources. The first printed English edition is that of Wynkyn de Worde, 1499; and the best that of Halliwell, 1839, reprinted 1866. Mandeville had long the reputation of being the 'father of English prose.' He was said to have been born at St. Albans about 1300, set out on his travels in 1322, returned in 1357, died and was buried at Liège; but much of his personal history is mere invention, and the very name of the compiler of the travels is a matter of doubt.

Mandible (man'di-bl), the term more especially applied to both the upper and under jaws of birds. In mammals it is applied only to the under jaw, and in the Articulata to the upper or anterior pair of jaws, which are generally solid, horny, biting organs. It is also applied to the beak of the Cephalopods.

Mandingoes (man-ding'ōs), a negro tribe of West Africa, remarkable for their intelligence, and generally for the advances they have made in civilization. The original country of this people, who are now spread over a great portion of West Africa, was the north slope of the high tableland of

Senegambia. They are nominally Mohammedans, are keen traders, work iron and gold, manufacture cotton cloth and leather, and cultivate a variety of crops. They live in small independent states, their clay-built walled towns often containing about 10,000 inhabitants.

Mandioc. See *Cassava.*

Mandogarh. See *Mandu.*

Mandoline (man'du-lin), a musical instrument of the guitar kind. There are several varieties, each with different tunings. The Neapolitan has four strings tuned like those of the violin G, D, A, E; the Milanese has five double strings (each pair in unison) tuned G, C, A, D, E. A plectrum is used in the right hand, the fingers of the left stopping the strings on the fretted finger-board.

Mandrake (man'drāk) the popular name of plants of the genus *Mandragŏra*, nat. order Solanaceæ, natives of south and east of Europe and Western Asia, and not uncommon in British gardens. *M. officinālis* has large tap-roots; the leaves radical, sessile, ovate, entire and waved. There is no stem; but the flowers, which are white with a bell-shaped corolla, stand upon simple stalks. The fruit is a large two-celled berry of an orange color, containing many kidney-shaped seeds. The root possesses narcotic qualities, and from its occasional resemblance to the human figure was formerly supposed to possess an inferior kind of animal life, and to shriek when torn up. It was believed to have many magical virtues, and to be an aphrodisiac and a cure for barrenness (Gen., xxx, 14, 16).

Mandrill (man'dril), a species of baboon (*Cynocephālus mormon*), which is distinguished by the short or rudimentary tail, by the elongated dog-like muzzle, and by the presence of buttock callosities which are generally brightly colored. The mandrills inhabit Western Africa, where they associate in large troops. Full-grown males measure about 5 feet; they are exceedingly strong and muscular, and fierce in disposition. They have cheek protuberances colored with stripes of brilliant red and blue.

Mandu (man'du), or MANDOGARH, a deserted town in Dhar State, Central India, the ancient capital of Malwah, 38 miles S. W. of Indore. It is celebrated for its magnificent ruins, including the great mosque, the finest specimen of Afghan architecture in India; a marble mausoleum of one of the kings of Malwah, a royal palace, etc. It occupies about 8 sq. miles of ground.

Manduria (man-dō'rē-a), a town of Southern Italy, province of Lecce, 54 miles N. N. W. of Otranto. Pop. 18,190.

Mandvi (mānd'vē), a seaport in the state of Cutch, Bombay, India. It is situated on the Gulf of Cutch, 36 miles S. of Bhuj, the capital of the state, and is a port of call for British-India steamers. Pop. 24,683.

Maneh (ma'ne; Heb.), a Hebrew weight used in estimating gold and silver, and believed to contain a hundred shekels of gold and sixty of silver.

Manes (mā'nēz), among the Romans, the souls or ghosts of the dead, to whom were presented oblations of victims, wine, milk, garlands of flowers, etc.

Manet (mä-nā), EDOUARD, a French painter of the modern realistic school, born at Paris in 1832; died in 1883. *The Boy with the Sword*, in the Metropolitan Museum, New York, is one of his most representative works.

Manetho (man'e-thō), an Egyptian priest and historian, who belonged to the town of Sebennytus in Lower Egypt, and lived in the reign of Ptolemy Soter, about the beginning of the third century B.C. He wrote a *General History of Egypt*, beginning with the mythological period and ending with the period when Egypt fell under the rule of Alexander the Great. The history is lost, but the lists of the dynasties are preserved in Julius Africanus and Eusebius.

Manfred (man'fred), King of the Two Sicilies; born in 1231; died in 1266. A natural son of the Emperor Frederick II, he was regent in Italy first for his brother and then for his nephew, on whose rumored death he was crowned king. He refused to resign in favor of his nephew, was excommunicated, and his kingdom of the Sicilies given as a papal fief to Charles of Anjou. The latter marched into Naples and gained a victory, in which Manfred was killed.

Manfredonia (mān-frā-dō'nē-ä), a seaport of South Italy, province of Foggia, on the gulf of same name, at the foot of Mount Gargano, 22 miles northeast of Foggia. It was founded by King Manfred about 1263. Pop. 11,549.

Mangalore (man-ga-lōr'), a seaport and military station of India, in South Canara district, Madras. It is a clean and prosperous town, and has large exports of coffee. There is a Roman Catholic College, and the Basel Lutheran Mission has its headquarters here. Pop. (1912) 48,412.

Manganese (man'ga-nēs; chemical symbol Mn, atomic weight 55), a metal of a dusky-white or whitish-gray color, very hard and difficult to fuse. Exposed to air it speedily oxidizes; it decomposes water with evolution of hydrogen. The common ore of manganese is the dioxide, black oxide, or peroxide (MnO_2), the pyrolusite of mineralogists, a substance largely employed in the preparation of chlorine for the manufacture of bleaching powder or chlorate of lime. It is employed in the manufacture of plate glass, to correct the yellow color which oxide of iron is apt to impart to the glass. It is also used in making the black enamel of pottery. Other oxides are the protoxide (MnO), sesquioxide (Mn_2O_3), the red oxide (Mn_3O_4), and permanganic acid (Mn_2O_7). The latter is only known in solution or in a state of combination. It is largely used in analytical chemistry. Metallic manganese is obtained by reduction of the oxide by means of heat and finely divided carbon. It resembles iron in appearance and properties; is a constituent of many mineral waters, and is employed in medicine. In steel manufacture it is used in certain proportions with advantage as regards the ductility of the steel and ability to withstand forging, and in other manufacturing operations it forms an important element. It is found in the United States, which yields an annual product at times above 300,000 tons.

Manganese Bronze, a kind of bronze in which the copper forming the base of the alloy is mixed with a certain proportion of ferro-manganese, and which has exceptional qualities in the way of strength, hardness, toughness, etc. Various qualities are manufactured, each suited for certain special purposes. One quality, in which the zinc alloyed with the treated copper is considerably in excess of the tin, is made into rods, plates, etc., and when simply cast is said to have a tensile strength of about 24 tons per square inch, with an elastic limit of from 14 to 15 tons. Another quality used in gun-founding has all the characteristics of forged steel without any of its defects. Another quality is in extensive use for toothed wheels, gearing, brackets, and all kinds of machinery supports. From its non-liability to corrosion it is largely employed in the manufacture of propellers.

Manganese-brown. See *Vappaugh-brown.*

Manganite (man'ga-nīt), one of the ores of manganese, the hydrated sesquioxide. It is also called hydrated sesquioxide or *Gray Manganese-ore.* It is used in the manufacture of glass.

Mange (mānj), a cutaneous disease to which dogs, horses, cattle, etc., are liable. It resembles in some measure the itch in the human subject, ordinary mange being due to the presence of a burrowing parasite. Both local application and internal remedies are used in its cure.

Mangel-wurzel (mang'gl wur'zl), a large-rooted species of beet (*Beta vulgāris macrorhiza*) extensively cultivated in Europe for feeding cattle. It requires a liberally manured generous soil, which in favorable circumstances may grow from 70 to 80 tons per acre. It is produced largely in the United States.

Mango (man'gō), the fruit of the mango tree (*Mangifēra indica*), nat. order Anacardiaceæ, a native of tropical Asia, but now widely cultivated throughout the tropics. Fine varieties produce a luscious, slightly acid fruit much prized for dessert. The large flat kernel is nutritious, and has been cooked for food in times of scarcity.

Mango-bird, the Indian oriole (*Oriōlus Kundoo*).

Mango-fish, a fish of the Ganges (*Polynēmus risua*), about 15 inches long, and highly esteemed for food. It is of a beautiful yellow color, and the pectoral fins have some of the rays extended into long threads. It ascends the Ganges in April and May, and is then sought after as a great delicacy.

Mangold-wurzel. See *Mangel-wurzel.*

Mangosteen (mang'gō-stēn), a tree of the East Indies, *Garcinia Mangostāna*, nat. order Guttiferæ. The tree grows to the height of 18 feet, and the fruit is about the size of an orange, and contains a juicy white pulp of a delicate, sweet, subacid flavor. It is esteemed one of the most delicious and wholesome of all known fruits.

Mangrove (man'grōv; *Rhizophōra*), a genus of plants (type of the family Rhizophoraceæ) consisting of trees or shrubs which grow in tropical countries along the muddy beaches of low coasts, where they form impenetrable barriers for long distances. They throw out numerous roots from the lower part of the stem, and also send down long slender roots from the branches, like the Indian banyan tree. The seeds germinate in the seed-vessel, the root growing downward till it fixes itself in the mud. The wood of the *R. Mangle* is dark red, hard and durable, and the bark is used for

tanning. The fruit is said to be sweet and edible, and the fermented juice is made into a kind of light wine. The name is also given to the genus *Avicennia* of the verbena family, which occupies large tracts of shore in tropical countries, extending as far south as New Zealand and Tasmania.

Mangrove Tree.

Manhattan (man-hat'an), a city, capital of Riley Co., Kansas, on the Kansas River, 52 miles w. of Topeka. It is the seat of the Kansas Agricultural College. Pop. 5722.

Manhattan, Borough of, Greater New York. It formerly constituted New York City. See *New York*. Pop. 2,331,542.

Manhattan Island, New York, at the mouth of Hudson River, and bounded on the north by Spuyten Duyvil Creek (now the Harlem ship canal), is about 13 miles long and 2¼ wide, and contains the principal business and residential section of the city of New York. It rises to an elevation of about 250 feet in its northern section, and is almost completely built over, with the exception of the extreme northern section.

Manhole (man'hōl), an opening into a drain, boiler, tank, or other enclosure in the earth or elsewhere, through which a man may enter for examination, cleaning, or repair.

Manichæism (man-i-kē'izm), a great religious system which sprung up in western Asia, near the close of the third century, of Semitic origin, but which adopted many Christian elements. It lingered on through persecution until the middle ages.

Manicure (man'i-kūr), professional care and treatment of the hands, especially the nails. A manicurist is the one who professionally engages in this duty.

Manifest (man'i-fest) is a document signed by the master of a vessel at the place of lading, to be exhibited at the custom-house, containing a specific description of the ship and her cargo, with the destination of the ship and of each package of the goods, etc.

Manila, or Manilla (ma-nil'a), the capital city of the island of Luzon and of the Philippine Islands, lies on the bay of the same name, and at the mouth of the river Pasig. It consists of an old fortified city with extensive suburbs, in which are the mass of the population, and the business premises, factories, and residences of the European inhabitants. Manila is the center of commerce of the Philippines, and exports sugar, tobacco, cigars and cheroots, indigo, Manila hemp, coffee, mats, hides,

trepang, rice, etc. It imports British and United States cloths, hardware, etc., and a great variety of articles, tea, pottery, etc., from China. The manufactures consist chiefly of cigars and cheroots, and hemp and cotton fabrics. Manila was founded by Miguel Lopez de Legaspé, the conqueror of the Philippine Islands, in 1571. It has frequently suffered from earthquakes, one of the most disastrous occurring in 1863. This city, formerly the capital of the Spanish Philippines, was captured by the United States in the war with Spain of 1898, and is now the center of the American government of the islands. Pop. (1910) 234,409.

Manilla, or Manila Hemp. See *Abaca*.

Man'ioc. See *Cassava*.

Maniple (man'i-pl), in the Roman Catholic and some other churches, one of the sacred vestments, being an ornament worn by the priest above the left wrist at the celebration of the eucharist. It is now of the same width and color as the stole and the vestment or chasuble, fringed at the ends,

and generally about 1¼ yards in length. See *Chasuble.*

Manipur (man-i-pŏr′), a native state of Northeastern India, consisting principally of an extensive valley in the heart of the mountainous country lying between Assam, Cachar, Burmah and Chittagong; area, 8300 sq. miles; pop. 284,465.

Manis (ma′nis), a genus of edentate mammals covered with large, hard, triangular scales with sharp edges, and overlapping each other like tiles on a roof; often called *Scaly Lizards, Scaly Ant-eaters,* or *Pangolins.* See *Pangolin.*

Manisa (mä′nē-sa; anciently *Magnesia*), a town in Asiatic Turkey. It was an important town in the middle ages, and is now a busy center of trade. Pop. about 35,000.

Manistee (man-is-tē′), a city, capital of Manistee County, Michigan, on Lake Michigan, at the mouth of the Manistee River, 70 miles s. w. of Traverse City. It is an important center of lumber manufacture, having many saw and shingle mills, also ironworks, shirt, watch and furniture factories, etc. Fruit-growing is a large industry. Pop. 12,381.

Manitch, MANYTCH (man′itch), a river in South Russia, which in its course connects a series of long narrow salt lakes, and joins the Don near Tcherkask. It has been proposed to utilize it in the construction of a canal to join the Sea of Azov and the Caspian.

Manito (man′i-tō), MANITOU, among certain of the North American Indians, a name given to whatever is an object of religious awe or reverence, whether a good or evil spirit or a fetish. Two manitos or spirits are spoken of by preëminence, the one the spirit of good, the other the spirit of evil.

Manitoba (man-i-tō-bä′), a province of the Dominion of Canada, bounded on the south by the United States, on the north and east by the N. W. Territories, east by Ontario, and west by Saskatchewan. It occupies a position nearly in the center of the North American continent, and extends from 49° to 52° 50′ N. lat.; and from 89° to 101° 20′ w. lon.; area, 251,832 sq. miles. The climate is warm in summer, but very cold in winter. The summer mean is about 66°, but in winter the thermometer sinks to 30°, 40°, and sometimes 50° below zero, though this severe cold is mitigated by a clear dry atmosphere. The summer months are part of May, June, July, August and September. The principal rivers are the Assiniboine and the Red River, the latter having the greater part of its course in the United States. The largest lakes are Winnipeg, Winnipegosis and Manitoba, the two former being only partially included within the boundaries of the province. The greater part of the province consists of level treeless prairie land, covered with a rich vegetable growth in summer. The banks of the streams, however, are lined with a timber belt extending from about half a mile to ten miles back. The soil is generally a rich black mold, resting partly on a limestone formation, and partly on a thick coat of hard clay. Wheat, oats, barley, Indian corn, hops, flax, hemp, and all kinds of garden vegetables produce excellent crops. For wheat growing Manitoba presents peculiar advantages, and the production is large. Potatoes and all other root-crops thrive well, and the prairie grasses furnish good hay. Game is abundant, and the rivers and lakes teem with fish. Lignite is found and the mountains give promise of considerable mineral wealth. The public affairs are administered by a lieutenant-governor, an executive council, and a legislative assembly elected for four years. The school system established by law is entirely denominational, and is supported by local assessments, supplemented by legislative grants. The capital of the province is Winnipeg, situated at the junction of the Assiniboine and Red rivers; other towns are Portage la Prairie, Brandon, Selkirk and Emerson. The nucleus of Manitoba was the Red River Settlement established in 1812, but little progress was made till the territory became part of Canada in 1870. The trade of the province has been greatly increased since 1878, when Winnipeg was connected with the railway system of the United States; and the construction of the Canadian Pacific has added to its prosperity. By the Extension Act of 1912 the area of Manitoba was increased by 188,100 sq. miles, taken from the Northwest Territory. Pop (1911) 455,614.

Manitoba Lake, a lake of Canada, province of Manitoba, 30 or 40 miles s. w. of Lake Winnipeg, about 120 miles in length by about 25 miles in breadth; area, 1900 sq. miles. It receives the waters of several lakes at its northern extremity, and at its southern White Mud River. It discharges into Lake Winnipeg through the Dauphin River.

Manitou. See *Manito.*

Manitoulin Islands (ma n-i-t ō′-lin), a group of North American islands in Lake Huron, consisting of Grand Manitoulin, 80

miles long by 5 to 30 broad, Little Manitoulin, and Drummond Island. The two former belong to Canada, the latter to the United States (Michigan). Pop. about 2000, more than one-half being Indians.

Manitowoc (man-i-tō-wok'), a city of Wisconsin, capital of county of same name, on the west shore of Lake Michigan, 77 miles N. of Milwaukee. It has a good harbor, with shipping docks, and shipbuilding is an active industry. There are large breweries and cigar factories, extensive iron-works, a large glue factory, also flour mills, tanneries, brickyards, etc. There is here a Polish Orphan Asylum and a county insane asylum. Pop. 13,027.

Mankato (man-kā'tō), a city, capital of Blue Earth County, Minnesota, on the Minnesota River, at head of navigation. It is a manufacturing city, its industries including furniture, pump, plow and carriage works, foundries, breweries, flour and knitting mills, etc. There are fine stone quarries in the vicinity. It has a State normal school. Pop. 10,365.

Mann, HORACE, educator, born at Franklin, Massachusetts, in 1796; died in 1859. The revival of the common school system was the work of his life, and his reports of the ignorance of the people and the incompetence of the teachers stirred the people strongly to the need of reform. He was secretary of the Massachusetts Board of Education for 11 years, and through his influence important changes were made in the school system of the State. He was elected to Congress in 1848, and became president of Antioch College in 1852. His labors have been acknowledged by giving him a place in the New York Hall of Fame.

Manna (man'a), the sweet concrete juice which is obtained by incisions made in the stem of a species of ash, *Fraxinus Ornus*, a native of Sicily, Calabria, and other parts of the south of Europe. The manna of commerce is collected in Sicily, where the manna-ash is cultivated for the purpose in regular plantations. The best manna is in oblong pieces or flakes of a whitish or pale-yellow color, light, friable and somewhat transparent. It has a slight peculiar odor, and a sweetish taste mixed with a slight degree of bitterness, and is employed as a gentle laxative for children or persons of weak habit. It is, however, generally used as an adjunct to other more active medicines. Other sweetish secretions exuded by some other plants growing in warm and dry climates, as the *Eucalyptus mannifera* of Australia, the *Tamarix mannifera* or *gallica* of Arabia and Syria, are considered to be kinds of manna. Small quantities of manna, known under the name of *Briançon manna*, are obtained from the common larch. In Scripture we are told that a substance called manna was miraculously furnished as food for the Israelites in their journey through the wilderness of Arabia. Some persons identify it with the saccharine substance yielded by the *Tamarix mannifera*.

Manna-ash. See *Manna*.

Manna-croup, a granular preparation of wheat-flour deprived of bran. It consists of the large hard grains of wheat-flour retained in the bolting-machine after the fine flour has been passed through its meshes. It is used for making soups, puddings, etc. See also *Manna Grass*.

Manna Grass, the *Poa* or *Glyceria fluitans*, a grass growing in wet places throughout the temperate regions of the globe. It affords food for cattle, and the seeds, called *Polish manna*, *manna seeds* and *manna-croup*, are used in some countries in soups and gruels.

Mannheim (mân'him), a town of Germany, grand-duchy of Baden, on the right bank of the Rhine, near the confluence of that river with the Neckar. It is regularly laid out in square blocks, and is surrounded by a promenade on the site of the ancient ramparts. It is connected by a bridge with Ludwigshafen, a thriving town on the opposite bank of the Rhine, in Bavarian territory. It has an extensive harbor and docks, and is the chief commercial town on the Upper Rhine. Industries include the manufacture of machinery, sugar, chemicals, wall-paper, tobacco, etc. The principal buildings are the Schloss or castle, the theater, arsenal, Jesuits' church, etc. The town has suffered severely from war; in the siege of 1795 only a few houses were uninjured. Pop. (1910) 193,379.

Manning (man'ing), HENRY EDWARD, CARDINAL, born at Totteridge, Hertfordshire in 1808; educated at Harrow and Balliol College, Oxford; rector of Lavington and Graffham, Sussex (1834-40); archdeacon of Chichester (1840-51). He took an active part in the Tractarian movement, and in 1851 joined the Church of Rome, and was ordained priest. On the death of Cardinal Wiseman he succeeded him as Archbishop of Westminster (1865), and ten years after he was made cardinal. Social and

philanthropic questions received much of his attention; he was an ardent supporter of total abstinence, and was a member of the commissions on the housing of the poor and on education. He wrote *The Temporal Power of the Pope; The True Story of the Vatican Council*, and *The Four Great Evils of the Day*. He died in 1892.

Mannite (man'it; $C_6H_{14}O_6$), a peculiar variety of sugar obtained from manna, and also found in the juices which exude from several species of cherry, in the fermented juice of beetrot, carrots, etc.

Manœuvres (ma-nō'vérz), the movements and evolutions of any large body of troops or fleet of ships, for the purpose of testing the efficiency of the various bodies of the service under the conditions of actual warfare, and for the purpose of instructing officers in tactics, and officers and men in their various duties. For these purposes mimic warfare is carried on periodically under the name of military or naval manœuvres by several of the leading powers.

Man-of-war Bird. See *Albatross*.

Manometer (ma-nom'e-tér; Gr. *manos*, rare, *metron*, measure), an instrument to measure or show the alterations in the rarity or density of the air, or to measure the rarity of any gas. Such instruments as measure the elastic force of steam are also properly termed manometers. They are variously constructed.

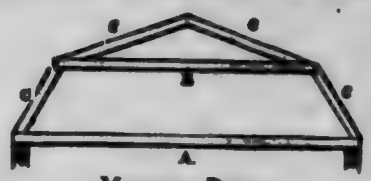
Manor (man'ur), originally a piece of territory held by a lord or great personage, who occupied a part of it, as much as was necessary for the use of his own immediate family, and granted or leased the remainder to tenants for stipulated rents or services. Manors were also called baronies, as they still are lordships, and the lord was empowered to hold a domestic court called the *court baron* for punishing misdemeanors, settling disputes, etc., within the manor.

Manresa (man-rā'sa), a city in Spain, province of and 34 miles northwest of the city of Barcelona. It is well built, surrounded by old walls, commanded by a fort, and has considerable manufactures, etc. Pop. 23,252.

Mans, Le (lé mäṅ), a town of France, capital of department Sarthe, on a height above the Sarthe, 115 miles southwest of Paris. The principal edifice is a fine Gothic cathedral, in part supposed to be of the tenth century. The nave is in the Romanesque style; the choir (104 feet high) is Gothic of the thirteenth century. The principal manufactures are woolen and linen goods, machinery, leather, etc. Le Mans existed in the time of the Romans under the name of Cenomani; it was the birthplace of Henry II, the first of the Plantagenet kings of England; it witnessed the final dispersion of the Vendean army in 1793; and was the scene of the defeat of the French army under Chanzy (to whom a monument has been erected) by the Germans under Prince Frederick Charles, January, 1871. Pop. (1911) 69,361.

Mansard (mȧn-sär), François, a French architect, born at Paris in 1598; died in 1666. The roof known by his name was his invention. (See *Mansard Roof*.) His nephew, Jules Hardouin, who assumed his name (1645-1708), attained great fame as an architect. The Palais de Versailles, Hôtel des Invalides, the Place Vendôme, and other works of the reign of Louis XIV, were from his designs.

Mansard Roof, a roof formed with an upper and under set of rafters on each side, the under set



Mansard Roof.
A, Tie-beam. B, Collar-beam. cc, Rafters.

approaching more nearly to the perpendicular than the upper.

Manse (mans), in Scotland, the dwelling-house of a parish minister of a rural parish. Every minister of a rural parish (*quoad omnis*) is entitled to have a manse erected and upheld by the heritors, but the ministers of royal burghs have properly no such right, unless where there is a landward district belonging to the parish in which the burgh lies. The term is sometimes loosely applied to the dwelling-house of dissenting ministers.

Mansel (man'sel), Henry Longueville, a logician and theologian, born at Cosgrove, Northamptonshire, 1820; died in London, 1871. He was educated at Merchant Taylors' School, London, and at St. John's College, Oxford, where he took his degree with double first-class honors in 1843. He became professor of moral and metaphysical philosophy at Oxford in 1859; professor of ecclesiastical history in 1867, and Dean of St. Paul's, London, 1868. Among his publications are *The Philosophy of Kant* (1856), *The Limits of Religious Thought*,

Metaphysics, or the Philosophy of Consciousness (1860), *The Philosophy of the Conditioned* 1866), etc.

Mansfeld (mans'felt), PETER ERNST, COUNT VON, Austrian general and statesman, born in 1517; died in 1604. He became governor of the Low Countries after the death of the Duke of Parma.—His natural son, ERNST (1585-1626), one of the best generals of the age, being disappointed in regard to the possession of his father's lands, joined the Protestant princes and became the bitter enemy of Austria, and a prominent leader in the Thirty Years' war. He was defeated by Wallenstein at Dessau in 1626, and died shortly afterwards.

Mansfield, (mans'fēld), a town of England, Nottinghamshire, 14 miles north by west of Nottingham, in a deep valley, surrounded by vestiges of Sherwood Forest. There are cotton mills, manufactures of silk and cotton hosiery, lace thread mills, etc. Pop. (1911) 36,897.

Mansfield, a village in Mansfield township (town), Massachusetts, 24 miles s. by w. of Boston. It has manufactures of cutlery, jewelry, straw goods, machinists' tools, chocolate, cocoa, etc. Pop. of town, 5183.

Mansfield, a city of Ohio, seat of Richland Co., 54 miles s. of nearest lake port, Sandusky, on the Pennsylvania, Baltimore and Ohio and Erie railroads, in a natural-gas field. It has manufactures of sanitary supplies, farming implements, stoves, machinery, brass goods, watch cases, chains, rubber goods, etc., and is a jobbing center for household commodities. It is the seat of the Ohio State Reformatory. Pop. 20,768.

Mansfield, RICHARD, actor, was born at Heligoland in 1857; died in 1907. He studied art in England, but adopted the theatrical profession, his career being mainly in the United States, where he was very popular, his range of characters extending from the *Mikado* to *Richard III.*

Mansfield, WILLIAM MURRAY, EARL OF, the fourth son of David, Lord Stormont, was born at Scone, in Scotland in 1705; died in 1793. Educated at Westminster School and at Oxford, he entered Lincoln's Inn and was called to the bar in 1731. In 1742 he was appointed solicitor-general, and obtained a seat in Parliament about the same time. In 1754 he was attorney-general, and in 1756 he was appointed chief-justice of the King's Bench, and made Baron Mansfield. In 1776 he was made an earl. On the trial of Woodfall for publishing Junius' Letters, and on some other occasions, he showed himself the zealous supporter of the government, and gave offense to the popular party. During the riots of 1780 his house in London was burned down by the mob. In 1788 he resigned his office of chief-justice; and the remainder of his life was spent in retirement. He was a great lawyer, not merely in a technical sense, but as one who could direct the practice of the courts towards broad principles of jurisprudence.

Manslaughter. See *Homicide.*

Mansura (mán-sō'rà), a town of Lower Egypt, on the Damietta branch of the Nile, 34 miles s. w. of Damietta. It is the chief depot of the breadstuffs, cotton, indigo, hemp and flax which this part of the Delta produces; has linen and cotton manufactories, etc. Pop. 40,279.

Mant, RICHARD, born at Southampton, England, where his father held a living in the church, 1776; began his ecclesiastical career as vicar of Coggeshall, in Essex, in 1810. In 1820 he became bishop of Killaloe; in 1823 bishop of Down and Connor; and in 1842 was translated to the see of Dromore. He died in 1848. The works of Dr. Mant consist of a vast number of sermons and tracts, but his celebrity rests on an edition of the Bible, which he prepared in conjunction with Dr. D'Oyley.

Mantchoos. See *Manchuria.*

Mantegna (mán-ten'yà), ANDREA, an early Italian painter, born at Padua in 1431; died at Mantua in 1506. He was a pupil of Squarcione, who adopted him as a son, but this affectionate relation did not continue. About 1459 he went to Verona, where he painted a magnificent altarpiece, in the church of St. Zeno. About 1466 he removed to Mantua, and the rest of his life was passed there, with the exception of two years at Rome. At Mantua, where he was patronized by the Marquis Gonzaga, he opened a school, and painted, among his most important works, the *Triumph of Julius Cæsar*, now at Hampton Court. One of the latest and best of this artist's works is the *Madonna della Vittoria*, now in the Louvre at Paris. There are others of his works in the Louvre, in particular *Wisdom Vanquishing Vice*, and a mythological work, *Parnassus.* Mantegna excelled in perspective, which was then a rare merit; he also excelled in engraving, and introduced the art of engraving on copper into Upper Italy. His two sons, Francesco and Carlo, were also painters.

Mantelet (man'te-let), or MANTLET, a musket-proof shield of iron or some other material, used at sieges for embrasures as a protection to gunners, and also for protecting markers at rifle-shooting target ranges.

Mantell (man'tel), GIDEON ALGERNON, geologist and palæontologist, born at Lewes, in Sussex in 1790; died in London in 1852. He practiced medicine in his native town, and later in London. Through his investigations the fossilized skeletons of those gigantic reptiles the Iguanodon and Hylæosaurus were discovered. He was a popular lecturer on geology, and published *The Fossils of the South Downs* (1822), *Illustrations of the Geology of Sussex* (1822), *Wonders of Geology* (1838), and *Medals of Creation* (1844).

Mantes (mänt), a town in France, department of Seine-et-Oise, on the Seine, 36 miles W. N. W. of Paris. It contains a fine Gothic church. Pop. 8113.

Manteuffel (män'toi-fl), EDWIN, BARON VON, a German field-marshal, born in 1809; died in 1885. He entered the army in 1827 and advanced rapidly, becoming lieutenant-general of cavalry in 1861. He took part in the Danish war of 1864, and next year was appointed governor of Schleswig. During the war between Prussia and Austria he commanded the army of the Main and fought at Hemstadt, Vettingen, Rossbrunn and Würzburg. He played a distinguished part in the Franco-German war, especially in several actions around Metz, at Amiens, and in driving Bourbaki's army across the frontier into Switzerland. From June, 1871, to July, 1873, he commanded the army of occupation in France, and was made field-marshal. In 1879 he was appointed governor-general of Alsace-Lorraine.

Mantinea (män-te-nē'ä; Greek, *Mantinéia*), an ancient city of Greece, in Arcadia, on the frontier of Argolis. It was the scene of the victory and death of Epaminondas, B.C. 362; and other famous battles.

Mantis (man'tis), a genus of orthopterous insects, remarkable for their grotesque forms. They frequent trees and plants, and the forms and colors of their bodies and wings are so like the leaves and twigs which surround them as to give them remarkable power to elude observation. (See *Mimicry*.) The *M. religiōsa*, or praying-mantis, has received its name from the peculiar position of the anterior pair of legs, resembling that of a person's hands at prayer. In their habits they are very voracious, killing insects and cutting them to pieces. They are natives chiefly of tropical regions, but are also found in France, Spain and the warmer parts of Europe. They are very

Praying-mantis (*Mantis religiosa*).

pugnacious, and are kept by the Chinese for the purpose of watching them fight.

Mantis-crab, a name given to crustacea of the genus *Squilla*, from the second pair of jaw-feet being very large, and formed very like the fore-legs of insects of the genus *Mantis*.

Mantle (man'tl), a kind of cloak or loose garment to be worn over other garments. In heraldry the name is given to the cloak or mantle which is often represented behind the escutcheon. In zoology the mantle is the soft skin or integument of molluscous animals, otherwise known as the *pallium*. This structure secretes the shell when present, and where the shell is absent the mantle forms an investing sac or integument in which the viscera and other organs are contained and protected.

Mantlet. See *Mantelet*.

Mantua (man'tū-a; Italian, *Mantōva*), a strongly fortified town of Northern Italy, one of four forming the *Quadrilateral*, capital of the province of the same name, 30 miles E. S. E. of Milan, on an almost insular site on the Mincio, which here divides into several arms, and afterwards spreads out into a marshy lake. The streets are regular and wide, and the public and private buildings have an ancient and substantial look. The most remarkable edifices are the cathedral, not very capacious, but after an elegant design by Giulio Romano; several churches; the ancient ducal palace of the Gonzagas, partly used as barracks; the Academy of Science and the Fine Arts; the Lyceum, containing a library and museum; the arsenal, and two theaters, one called the Teatro Virgiliano, employed for open-air performances in summer. The manufactures are limited. The trade is chiefly in the hands of the Jews, who live in a separate quarter called the Ghetto. Mantua is a very ancient city, having been founded, it is said, by the Etruscans before the building of Rome. The Gonzagas governed it for about three centuries with great ability, and distinguished themselves by the splendor of their art and their pab

ronage of literature and art. Virgil was born at the adjoining village of Andes, supposed to be the modern Pietole. Pop. 37,037.—The province, which is intersected by the Po, Mincio, and other streams, produces rice, wheat, silk, wine, etc.; area, 961 sq. miles; pop. 311,942.

Manu (ma'nō), an early Sanskrit writer, author of a book of laws, civil and religious, called the *Institutes of Manu*, still extant and holding an important place in Hindu literature.

Manual Alphabet. See *Deaf and Dumb*.

Manual Training, the education of the hands in the practical use of tools and art implements, which is becoming a part of the ordinary school culture. Before 1876 education in this direction was not attempted in the schools, except to some minor extent in Russia and Finland. It was the Russian exhibit in this field at the Centennial Exposition of 1876 that turned the attention of American educators toward this hopeful method, and manual training work was begun in 1877 at the Massachusetts Institute of Technology and at Washington University, St. Louis. The first manual training public school was opened in 1880 at St. Louis, and was so successful that similar schools were soon established in Chicago, Philadelphia, Baltimore and Toledo. Since 1885 manual training has become part of the course of study in all agricultural and mechanical colleges, and high schools of this character have been opened in large cities in general. These are not trade schools, founded for the purpose of teaching special trades, but were designed to give instruction in general manual dexterity. But they have led to the opening of special trade schools in some cities, where particular trades can be learned. Manual training has recently been added to the work of the lower schools in some cities.

Manuel II (ma'nō-el), King of Portugal, born in 1889, second son of Carlos I, succeeded to the throne on the assassination of his father, Carlos I, February 1, 1908, his elder brother, the crown prince, being assassinated at the same time. His reign failed to give satisfaction to the people, the long-continued corruption in administration and the state finances continuing, while profligacy and incapacity marked the character of the youthful king. In consequence a revolution broke out, October 4, 1910, which was quickly successful, the army and navy joining the insurgents. King Manuel fled to Gibraltar, a republic was proclaimed, and an edict was issued forbidding the return of the king or any member of the Braganza royal family to Portugal.

Manures (ma-nūrz'), vegetable, animal and mineral matters introduced into the soil to accelerate vegetation and increase the production of crops; substances used to improve the natural soil, or to restore to it the fertility which is diminished by the crops annually carried away. Animal substances employed as manures comprehend the putrefying carcasses of animals, ground bones, blood, the excrements of animals, as the dung of horses, cattle, sheep, poultry, etc.; urine, guano (the decomposed excrement of aquatic birds); the scrapings of leather, horn and the refuse of the shambles; the hair or wool of animals. Liquid manure, consisting of town sewage, the drainings of dung-heaps, stables and cow-houses, is largely employed in many districts. Almost every kind of vegetable substance, in one state or another, is used as manure. The principal mineral substances employed as manures are lime, chalk, sand, clay, marl; sulphates of potash, soda, ammonia and magnesia; nitrates of potash and soda; and phosphates of lime. It is from containing one or other of these substances that apatite, basic slag, cubic niter, kainite, etc., are so valuable. Manures are usually distributed over the surface of the land and then ploughed or harrowed into the soil; or they may be applied in drills when the object is to give direct benefit to the young plant. The kind of manure required for each crop depends on the nature of the crop, the quality and composition of the soil, and many other conditions. Modern researches upon plant nutrition, and the chemistry of agriculture in general, have shown us that the food of plants may be classed under the two headings of *air food* and *mineral food*. Air food consists of ammonia, water and carbon dioxide; mineral food, of those substances which remain as ash when the plant is ignited. The former class of food is supplied to the plant partly from the atmosphere and partly from the soil, the latter from the soil entirely. In the production of food by natural processes of plant growth a certain amount of air food and also of mineral food is abstracted from the soil, those amounts varying for different species of plants; if this food be returned to the soil, then a further growth of plants may be expected; if, however, seed is sown in the partially impoverished soil, there must be a decrease in the amount of crop obtained from that soil. As the plants serve to nourish animals, it fol-

lows that the substances which have been withdrawn from the soil by the plants may be returned to it in the shape partly of animal excreta, and partly of ground bones, etc. Different plants require different kinds of food; if, therefore, the kind of crop grown on the same land be varied from year to year, and if the soil be tilled so as to unlock its natural supplies of mineral food, it will be found that the average yield of crops may be maintained simply by the restitution to the land of that amount of food which has been removed from it by the plants. In this restitution it must be borne in mind that it is not only mineral but also air food which is to be restored. Plants undoubtedly draw large supplies of nitrogen and carbon from the atmosphere, but it has been abundantly proved that unless this supply is augmented by artificial sources the plants soon begin to fall off and the yield of crop very sensibly to diminish. The theory of manuring consists, then, in maintaining in the soil such an amount of plant food, both mineral and organic, as shall enable us to reap the largest possible amount of crops from that soil.

Manuscripts (man'ū-skripts; Lat. *manu scriptus*, written by the hand) are literally writings of any kind, whether on paper or any other material, in contradistinction to printed matter. Previous to the introduction of printing all literature was contained in manuscripts, and the deciphering and proper use of these form an important part in the science of palæography. All the existing ancient manuscripts are written on parchment or on paper. The paper is sometimes Egyptian (prepared from the real papyrus shrub), sometimes cotton or silk paper (*charta bombycina*). The most common ink is the black, which is very old. Red ink of a dazzling beauty is also found in ancient times in manuscripts. With it were written the initial letters, the first lines, and the titles, which were thence called *rubrica*. Blue, green and yellow inks were more rarely used. On rare occasions gold and silver were the mediums, though from their cost they are oftenest confined to initial letters. With respect to external form, manuscripts are divided into rolls (*volumina*), and into stitched books or volumes (properly *codices*). Among the ancients the writers of manuscripts were mainly freedmen or slaves (*scribæ librarii*). At a later period the monks were largely engaged in the production of manuscripts. In all the principal monasteries was a *scriptorium*, in which the *scriptor* or scribe could pursue his work in quiet, generally assisted by a *dictator*, who read aloud the text to be copied; the manuscript was then revised by a *corrector*, and afterwards handed to the *minister*, who added the ornamental capitals and artistic designs. The most ancient manuscripts still preserved are those written on papyrus which have been found in Egyptian tombs. Several of these are of date considerably before the Christian era: notably fragments of the *Iliad* and a papyrus containing the orations of Lycophron and Euxenippus, 11 feet in length and containing 49 columns of writing. Next to them in point of age are the Latin manuscripts found at Herculaneum. Then there are the manuscripts of the imperial era of Rome, among which are the Vatican Terence and Septuagint, and the Alexandrine codex of the British Museum. Numerous manuscripts of the Old and New Testaments of the second and third centuries exist; and among those of profane authors may be noted that of Virgil (fourth century), in the Laurentian Library at Florence; a Livy (fifth century), in the Imperial Library of Vienna; the Jewish Antiquities of Josephus, in the Ambrosian Library, Milan, etc. It was a common custom in the middle ages to obliterate and erase writings on parchment, for the purpose of writing on the materials anew, manuscripts thus treated being called *palimpsests*.

The art of illuminating manuscripts dates from the remotest antiquity. The Egyptian papyri were ornamented with vignettes or miniatures attached to the chapters, either designed in black outlines or painted in primary colors in distemper. The oldest ornamented Greek and Roman manuscripts that have survived are the Dioscorides of Vienna and the Virgil of the Vatican, both of the fourth century, and having vignettes or pictures in a Byzantine style of art. From the eighth to the eleventh century the initial letters in use were composed of figures of men, quadrupeds, fishes, birds, etc. The initials of the twelfth century are made up of masses of conventional foliage interspersed with the animal figures of the preceding centuries. Continuous borders, with vignettes, tail-pieces, etc., were also prevalent in later times, and some manuscripts are ornamented with very artistic designs. In the sixteenth century the art of illumination became extinct. Some attempts have been made to revive it by adorning paper, parchment and vellum with designs in colors or metals.

Manutius (ma-nō'she-us), ALDUS, or ALDO MANUZIO, an Italian printer, born about 1447; died in 1515. In

1488 he established himself as a printer at Venice, but the first work which he finished was not published till 1494. In the course of the ensuing twenty years he printed the works of the most ancient Latin and Greek authors extant, as well as many productions of his contemporaries, and some treatises of his own composition. He was the inventor of the italic or cursive character, hence called *Aldine*. His business was continued by his son PAOLO MANUZIO, born in 1512; died in 1574; a man distinguished as a classical scholar no less than as a printer; and by his grandson ALDO, born in 1547; died in 1597. See *Aldine Editions*.

Manyplies (men'i-pliz), the popular name given to the *psalterium* or *omasus*, the third chamber or cavity of the ruminant stomach.

Manytch. See *Manitch*.

Manzanillo (mȧn-thȧ-nēl'yō). (1) A seaport on the south coast of Cuba, with a good roadstead. Pop. 15,819. (2) A seaport of Mexico, state of Colima, on the Pacific. Pop. 4000.

Manzoni (man-zō'nē), ALESSANDRO, an Italian poet and novelist, was born in 1784; died in 1873. He was the son of Count Pietro Manzoni and of the Marchioness Giulia Beccaria, daughter of the Marquis Cesare Beccaria, author of the well-known treatise on *Crimes and Their Punishment*. After his father's death in 1805 he lived for some time in Paris with his mother, and in 1808 he married the daughter of a Genoese banker, under whose influence he settled down into the fervent Catholicism which colored all the rest of his life. His chief works are the *Inni Sacri*, a series of sacred lyrics; *Il Cinque Maggio*, a powerful ode on the death of Napoleon; the tragedies *Il Conte di Carmagnola*, and *Adelchi*; and his great novel *I Promessi Sposi* ('The Betrothed').

Maoris (mȧ'o-riz or mou'ris), the name given to the natives of New Zealand. See *New Zealand*.

Map, a projection on a plane surface of the whole or a part of the earth's surface, showing its main features in more or less detail. The earth being a spheroid, its surface cannot be made to coincide rigorously with a plane; and it therefore becomes necessary to have recourse to a *projection*, that is, a plan on a plane surface, which indicates with sufficient correctness the relative positions, dimensions, etc., of the different parts of the spherical surface. There are five principal projections, the orthographic, the stereographic, the globular, the conical and the cylindrical or Mercator's, distinguished from each other by the different positions of the point of projection, or that in which the eye is supposed to be placed. The last named gives a very erroneous idea of the relative size of the different portions of the earth's surface, especially towards the poles, but is very useful to mariners, in enabling them to lay off a course that can be steered by compass in straight lines. (See *Mercator's Projection*.) A nautical map is usually called a *chart* (which see). A map of the earth, or a portion of the earth, usually exhibits merely the positions of countries, mountains, rivers, lakes, cities, etc., relatively to one another, and by means of lines of latitude and longitude relatively to every other point on the earth's surface. But a map may be so colored or shaded as to give a variety of information: for example, to indicate the geological structure, the amount of rainfall, or other meteorological phenomena, the results of statistical inquiry, the languages spoken, etc. Hence we have geological, meteorological, linguistic, and other kinds of maps. We find traces of maps among the Egyptians in the times of Sesostris (B.C. 1618), who caused his hereditary dominions and his conquests to be represented on tablets for his people. The first attempt to draw a map of the whole known world was made by Anaximander of Miletus (B.C. 611-547). Ptolemy (flourished 120-161 A.D.) drew maps according to the stereographic projection. Agathodæmon, an artist of Alexandria, drew twenty-six maps for the geography of Ptolemy. Roman map-making is represented by the Peutinger table made about 230 A.D., which gives itineraries of the whole world known to the Romans from Britain to India. No attempt at scientific mapping was made during the middle ages, and modern map-making was identified in its early days with the names of Abraham Ortelius Gerhard Mercator (born in 1512; died in 1594), William and John Blaeu (who produced 616 maps), Sanson, Schenk, Visschen, De Witt, Hondius. It is only, however, during the present period that mathematically accurate surveys and delineations of the earth's surface have been made.

Map, or MAPES, WALTER, a scholar and poet of the twelfth century, a native of the Welsh Marches, is supposed to have been born about 1150: and to have died about 1210. He studied at the University of Paris, and made an important figure in the court of Henry II. He became Archdeacon of Oxford in 1199; contributed to the Arthurian cycle

of romance the romances of the *Quête du Saint Graal*, *Lancelot du Lac*, and the *Mort Artus*; was the author of a curious book, *De Nugis Curialium*, a note-book of the events of the day and of court gossip; and to him is attributed a collection of rhymed Latin verse, in which the abuses of the church are hit off with vigor and humor. Among the most remarkable of these are the satirical *Apocalypse* and the *Confession of Bishop Golias*.

Maple (mā'pl), a name for trees of the genus *Acer*, nat. order Aceraceæ or Sapindaceæ, peculiar to the northern and temperate parts of the globe.

Sugar Maple (*Acer saccharinum*).

About fifty species are known, distributed through North America, Europe, and different parts of Asia. They include small or large trees, with a sweetish, rarely milky, sap, opposite deciduous, simple, usually lobed leaves, and axillary and terminal racemes or corymbs of small greenish flowers. The characteristic form of the fruit is shown in the figure. Two species are common in Europe: the great maple, often miscalled sycamore (*A. Pseudo-platānus*), and the common maple (*A. campestre*). The wood of the former is valuable for various purposes, as for carving, turnery, musical instruments, wooden dishes, etc. Another well-known species is the Norway maple (*A. platanoides*), often planted as an ornamental tree. The wood of several American species is also applied to various uses. The sugar or rock maple (*A. saccharinum*) is the most important species; this yields maple sugar, which in many parts of the United States is an important article of manufacture. A tree of ordinary size will yield from 15 to 30 gallons of sap yearly, from which are made from 2 to 4 lbs. of sugar. The knotted parts of the sugar-maple furnish the pretty *bird's-eye maple* of cabinet-makers. Some other American species are the white maple (*A. dasycarpum*); the red or swamp maple (*A. rubrum*); the striped maple or moose wood (*A. Pennsylvanicum*); the mountain maple (*A. spicatum*); the striped maple or moose wood (*A. circinatum*); and the large-leaved maple (*A. macrophyllum*).

Lilybæum. Pop. (1911) 65,451.

Maqui (mak'wē), an evergreen or sub-evergreen shrub found in Chile from the juice of whose fruit the Chilians make a kind of wine. It is the best-known species of the genus *Aristotelia* (*A. Maqui*), and is referred to the nat. order Tiliaceæ (linden). It is cultivated as an ornamental shrub in England.

Marabou-stork (mar'a-bō), the name given to two species of storks, the delicate white feathers beneath the wing and tail of which form the beautiful and ornamental marabou feathers. One species is a native of West Africa (*Leptoptilus marabou*), another is common in India, where it is generally called the *adjutant* (which see).

Marabouts (mar'a-bōts), MARABUTS, among the Berbers of Northern Africa a sort of saints or sorcerers, who are held in high estimation, and who exercise in some villages a despotic authority. They distribute amulets, affect to work miracles, and are thought to exercise the gift of prophecy.—The name Marabouts is also used as equivalent to Almoravides (which see).

Maracaibo (mä-rä-kī'bō), a seaport of Venezuela, on the western side of the strait which unites the lake and gulf of the same name, about 20 miles from the sea. There is a good trade in coffee, cacao, leather, hides, medicinal plants, etc. Pop. about 50,000.—The Lake of Maracaibo is about 98 miles long and 80 broad at the widest part. It communicates, by a strait about 18 miles long and 3 broad, with the gulf of the same name, which is an inlet of the Caribbean Sea, 90 miles in length, and about 60 miles in width at the entrance.

Maragha (mä'rä-gä), an ancient walled town in Azerbijan, Persia, 10 miles from Lake Urumiah; famous for a fine marble which in thin plates is nearly transparent. Pop. 16,000.

Marajo (mä-rä-zhō'), an island of Brazil, formed by the estuaries of the Amazon and Pará, and belonging to the province of Pará; length, 180 miles; breadth, 125; pop. (chiefly Indians and Mestizoes), 20,000.

Maranham (mä-rä-nyam'), or MARANHÃO (mä-rä-nyoun),

a province of Brasil, on the northeast coast; area, 177,566 sq. miles. A considerable part of the surface is occupied by forests, yielding excellent timber and dyewoods. The soil is very fertile, producing maize, cotton, sugar, rice, cocoa, pimento, ginger, etc. Pop. 499,308. The capital, Maranhão (San Luis de M.), is a prosperous, well-built city on an island of the same name, carrying on a good trade in cotton, caoutchouc, hides, etc. Pop. about 40,000.

Marañon. See *Amazon.*

Maranta, a genus of plants, nat. order Marantaceæ. See *Arrow-root.*

Marantaceæ (mar-an-tā'se-ē), an order of endogenous plants, growing in tropical countries; called also *Cannaceæ.* They are perennial herbs with fibrous roots or fleshy creeping rhizomes, alternate simple leaves with sheathing footstalks, and irregular racemose or panicled flowers. The type genus is *Maranta,* which is more commonly called arrow-root.

Maraschino (ma-ras-kē'nō), a fine liquor distilled from a small black wild variety of cherry. The best-known kinds are the maraschino de Zara, from Zara in Dalmatia, and that from Corsica. An inferior kind is made in Germany.

Marasmus (ma-ras'mus), a wasting of the flesh without fever or apparent disease; often, however, dependent on disease of the mesenteric glands, or some obstruction in the course of the chyle.

Marat (mȧ-rä), JEAN PAUL, one of the most infamous leaders of the French revolution, born near Neufchâtel in 1744. He studied medicine at Paris, and previous to 1789 had spent many years in travel, visiting London, Edinburgh, Dublin, Amsterdam, etc., supporting himself by giving lessons in the modern languages, and at intervals publishing works on medical and scientific subjects. The first breath of the revolution, however, brought him to the front, and when Danton instituted the club of the Cordeliers, Marat became the editor of the *Publiciste Parisien,* better known under its later title *L'Ami du Peuple,* which was again changed to the *Journal de la République Française,* a journal which was the organ of that society, and soon became the oracle of the mob. It early advocated the most extreme measures, and the tone became more furious as Marat was inflamed by the prosecutions of the authorities. His paper was issued from various places of concealment until August 10, 1792, after which he took his seat at the commune, and played a leading part in the assassinations of September (1792). He was a member of the terrible committee of public safety.

Jean Paul Marat.

and of the convention where General Dumouriez and the Girondists, who endeavored at first to prevent his taking his seat, were the special objects of his attack. The establishment of the revolutionary tribunal, and of the committee for arresting the suspected, was adopted on his motions. On the approach of May 31, as president of the Jacobin Club he signed an address instigating the people to an insurrection, and to massacre all traitors. For this Marat was delivered over to the revolutionary tribunal, which acquitted him; and the people received him in triumph and covered him with wreaths. He was assassinated shortly after by Charlotte Corday, July 13, 1793. His remains were deposited in the Pantheon with national honors, but were subsequently removed.

Marathi (mȧ-rät'hē), a language of Southern India, closely allied to Sanskrit and written in the Sanskrit character. It is the vernacular of some sixteen millions of people, mostly in Hyderabad and Bombay presidency.

Marathon (mar'a-thon), a village of ancient Greece, in Attica, about 20 miles northeast of Athens. It was situated (probably on the site of the modern Vrana) on a plain which extends for about 6 miles along the seashore, with a breadth of from 1½ to 3 miles. It is famous for the overthrow of the Persians by the Athenians under Miltiades, 490 B.C., and for the Marathon races. (See following article.)

Marathon Run, a form of athletic training of recent adoption in several countries, arising from the redevelopment of the ancient Greek sports. After the battle of Marathon, a runner carried the news of the victory to Athens, many miles distant. The legend is that he fell dead after telling his story. Long runs of this character have now become common in many of our cities, in competition for marks of humor.

Marattas. See *Mahrattas.*

Maratti (mȧ-rȧt'tē), CARLO, an Italian painter and engraver, born in 1625. Louis XIV employed him to paint his celebrated picture of *Daphne.* Clement IX, whose portrait he painted, appointed him overseer of the Vatican gallery. He has been styled the last painter of the Roman school. His *Madonnas* were particularly admired. He died in 1713 at Rome, where his chief works are to be found.

Marble (mär'bl), the name given to certain varieties of limestone capable of receiving a brilliant polish, and which, both from their durability and the beauty of the tints of many of them, have at all periods of the world been greatly in request for purposes of art or ornament. White statuary marble is a pure carbonate of calcium. Marbles have been divided into seven varieties or classes, viz. 1, *marbles of a uniform color,* comprehending solely those which are either white or black; 2, *variegated marbles,* or those in which the spots and veins are interlaced and disposed without regularity; 3, *shell marbles,* or those which are in part made up of shells; 4, *lumachelli marbles,* or those which are apparently wholly formed of shells; 5, *cipolino marbles,* or those veined with green talc; 6. *breccia marbles,* or those which are f[illegible]d of angular fragments of differen[illegible]les united by a cement of some diff[illegible] color; 7, *pudding-stone marbles,* or those which are formed of reunited fragments, like the breccia marbles, only with the difference of having the pebbles rounded in place of being angular. By *antique marbles* are understood those kinds made use of by the ancients, the quarries of which are now, for the most part, exhausted or unknown. These include Parian marble, Pentelic marble, Carrara marble (still largely quarried), *rosso antico, giallo antico, verde antico,* etc.

Marblehead (mär'bl-hed), a seaport and township of Essex County, Massachusetts, 12 miles northeast from Boston, on a rocky point projecting into Massachusetts Bay. It has a good harbor, and is the summer headquarters for the Eastern, Boston and Corinthian Yacht Clubs. It was formerly one of the most important maritime towns of New England and is one of its oldest and quaintest places. It has boot and shoe factories, a seed-growing industry, and the workshop of the Curtis-Burgess flying machines. Pop. 7338.

Marbling (mär'bling), in bookbinding, a process of ornamenting the edges of books by dipping them, when cut, in a trough about 2 inches deep and filled with gum-water on the surface of which colored pigments have been thrown and disposed in various forms with a quill and comb. The colors adhering to the edge of the book are set by dashing cold water over them.

Marburg (mär'börg), a town of Prussia in the province of Hesse-Nassau, capital of the district of Cassel, on the slopes of an acclivity above the Lahn, 46 miles north from Frankfurt. The principal buildings are the castle of the landgraves of Hesse, now partly used as a prison; the university (about 800 students), the first founded in Germany after the Reformation; the church of St. Elizabeth (thirteenth century), the chancery, library and town house. Pop. (1905) 20,137.

Marcasite (mar'ka-sit), iron pyrites or bisulphide of iron. It is of a paler color than ordinary pyrites, being nearly of the color of tin, and its luster is more strongly metallic.

Marcelli'nus. See *Ammianus Marcellinus.*

Marcellus (mar-sel'us), MARCUS CLAUDIUS, a Roman general, five times consul (222, 215, 214, 210 and 208 B.C.); the first Roman who successfully encountered Hannibal in the second Punic war; and the conqueror of Syracuse (212 B.C.). He was killed in a skirmish with the Carthaginians in 208 B.C.

March, the measured and uniform tread of a body of men, as soldiers. It may be in slow, quick, or double time, the standard for the first or parade march being 75 paces in a minute, for the second 110, for the third 150.

March, a town of England, in the county and 29 miles northwest of Cambridge, on both sides of the Old Nene. Its two principal streets cross at right angles, and are each nearly 2 miles long. Pop. (1911) 8403.

March, originally the first month of the Roman year. Till the adoption of the new style in Britain (1752), the 25th of March was the first

day of the legal year; hence January, February, and the first twenty-four days of March have frequently two years indicated, as January 1, 170½, or 1701-02.

March, FRANCIS ANDREW, philologist, born at Milbury, Massachusetts, in 1825. He became a lawyer in 1850 and professor of comparative philology at Lafayette College in 1858. He was made president of the Spelling Reform Association on its organization in 1876. His ability in philological science is very high, and he has written *Comparative Grammar of the Anglo-Saxon Language, Philological Study of the English Language*, etc.

March PEYTON CONWAY (1864-), son of F. A., an American army officer, chief of staff of the U. S. Army from February, 1918. He was born at Easton, Pa., educated at Lafayette College, graduated from the U. S. Military Academy in 1888. He served in the Philippines and received the surrender of Aguinaldo's chief of staff.—FRANCIS A. MARCH, JR. (1863-), brother of former, philologist, editor Thesaurus-Dictionary, author 'The World War,' etc.

Marchena (mär-chä'nä), a town of Spain, in Andalusia, province of Seville, and 30 miles east by south from the city of that name. There are sulphur springs in its vicinity. Pop. 12,468.

Marches (mär'ches), the frontiers or boundaries of a territory. The term is most familiar as applied to the boundaries between England and Wales, and England and Scotland. The latter were divided into three portions, the western, the eastern and the middle marches, each of which had a governor, called warden of the marches.

Marches, THE, a territory of Italy, comprising a region lying between the Apennines and the Adriatic, and divided into four provinces—Urbino and Pesaro, Ancona, Mucerata and Ascoli.

Marcion (mar'si-on), the founder of an ascetic Gnostic sect, called after him Marcionites, was born at Sinope about the beginning of the second century of our era, his father being bishop of Sinope. He went to Rome about 140 A.D. and founded a system which assumed the existence of three original principles—the supreme and invisible, whom Marcion called the Good; the visible God, the Creator; and the Devil, or perhaps matter, the source of evil. The Creator, the God of the Old Testament, was the author of suffering. Jesus was not the Messiah promised by this being, but the son of the unseen God, who took the form, but not the substance of man. Marcion denied the resurrection of the body; he condemned marriage, thinking it wrong to increase a race born in subjection to the harsh rule of the Creator. His sect lasted for several centuries.

Marcomanni (mär-ko-man'i), MARKOMANNI, the name of an ancient German tribe or tribal league, apparently originally marchmen or borderers on the Rhenish frontier. They subsequently migrated east, displaced the Boii from their territory (the modern Bohemia), and under their king Maroboduus formed a great Marcomannic confederacy to hinder the extension of the Roman power beyond Pannonia. Being defeated, however, by a rival confederacy composed of the Cherusci and their allies, they entered into more or less friendly relations with Rome until the time of Domitian, whom they defeated. Trajan and Hadrian kept them in check, but in 166 A.D. they invaded Pannonia, and commenced the long *Marcomannic war*. Aurelius drove them back, and Commodus purchased peace from them, but they continued to make inroads into Rhætia and Noricum, and in the reign of Aurelian penetrated Italy as far as Ancona, and even threatened Rome itself. After that, however, they practically pass out of history.

Marconi (mär-chō'nē), GUGLIELMO (WILLIAM), an Italian physicist, born near Bologna in 1875. He was the first to succeed in devising a practical system of wireless telegraphy, beginning his researches at the age of 15. His apparatus was tested in England in 1897, when messages were sent over a distance of 15 kilometers. He used it in reporting election returns in 1900, and rapidly increased the distance covered, until in 1902 he succeeded in signaling across the Atlantic. Ocean news service by wireless was inaugurated by him in 1904, and the method developed until news items were regularly transmitted across the Atlantic, and in 1910 a message was transmitted from Ireland to Argentina. He was awarded, in 1909, one-half the Nobel prize for physics.

Marco Polo. See *Polo*.

Marcou, JULES, geologist, born at Salins, France, in 1824. He took part in the geological survey of the Jura Mountains. While in this work he made the acquaintance of Louis Agassiz, who invited him to the United States, and whom he assisted on his survey of the Lake Superior region in 1848. He

became connected with the Museum of Comparative Zoology at Cambridge in 1861 and was in the service of the government from 1875 till his death in 1898. He was the first geologist to cross the American continent; and on this trip drew a section map of the 35th parallel from the Mississippi River to the Pacific coast.

Marcus Aurelius. See *Aurelius Antoninus.*

Marcy (mär'si), WILLIAM LEARNED (1786-1857), an American statesman, born at Southbridge, Mass. Graduating from Brown University, he practiced law in Troy, N. Y. At the opening of the war of 1812 he entered the volunteer service as a lieutenant and led a successful attack on St. Regis, a Canadian post, capturing the first flag taken on land in the war. He became associate justice of the New York Supreme Court in 1829, and in 1831 was elected senator of the United States by the Democratic party, but resigned upon being chosen governor of New York, in 1832, an office which he held for three terms, though defeated in 1838 by William H. Seward. He was secretary of state in Pierce's administration, settling such important questions as the Oregon claim, the Arizona dispute, the Mexican boundary, Commodore Perry's negotiations with Japan, and the British fisheries dispute.

Mardi Gras (mär'dē grâs; 'fat Tuesday'), Shrove Tuesday, the last day before Lent. It is signalized in France by a gorgeous procession, which includes a fat ox richly caparisoned. In the United States the day is observed in New Orleans and some other southern cities with showy processions and other ceremonies.

Maremme (mar-em'mä), low swampy tracts of Italy, extending along the coast of Tuscany from the mouth of the Cecina to Orbitello.

Marengo (mä-ren'gō), a village in Italy, in the province of Alessandria, and so near the town of that name as to be considered one of its suburbs; celebrated for the battle of June 14, 1800, when the French under Bonaparte defeated the Austrians under Melas.

Mareotis (mar-ē-ō'tis), or MAREOUT, a lake of Lower Egypt, separated from the Mediterranean by the long narrow belt on which Alexandria stands. The main expanse is about 28 miles long by 20 broad, and lies 8 feet below the sea level. Salt is extensively made here by evaporation.

Mare's-tail Coral. See *Isis.*

Margaret (mar'ga-ret), Queen of Denmark, Norway and Sweden, called the *Northern Semiramis*, the daughter of Waldemar III, king of Denmark; born at Copenhagen in 1353, married to Hakon, king of Norway, in 1363. The death of her husband in 1380 placed Norway in her hands; that of her son Olaf in 1387 enabled her to secure the throne of Denmark, to which she had previously brought about his election; and after defeating Albert, the Swedish king, she also obtained possession of the throne of Sweden. She endeavored to place the union of the three kingdoms on a permanent basis by the celebrated Act of Union, or Treaty of Calmar (1397). She died in 1412, after having raised herself to a degree of power then unequaled in Europe from the time of Charlemagne.

Margaret, SAINT, the elder sister of Eadgar Ætheling, after the Norman Conquest took refuge with her brother at the court of Malcolm Canmore of Scotland, whom she shortly afterwards married. She is said to have introduced into Scotland the higher culture of the English court, and to have effected many reforms in the Scottish church. She died in 1093. Her daughter Matilda married Henry I.

Margaret of Anjou, daughter of René, titular king of Sicily, was born at Pont-à-Mousson, in Lorraine, in 1425, and was married in 1443 to Henry VI of England. The imbecility of the king made her practically regent, and her power being contested by the Duke of York, a claimant of the throne by an elder line, the protracted wars of the Roses commenced. At first victorious she was afterwards compelled to flee to Scotland, but raising an army in the north, she secured, by the battles of Wakefield (1460) and St. Albans (1461), the death of York and the release of the king. Her army, however, was soon afterwards annihilated at Towton (1461), and Edward (IV), the son of the late Duke of York, was declared king. She succeeded in obtaining assistance from Louis XI of France, but was once more defeated, and took refuge in France. Warwick then became embroiled with the young king, and determined to replace Henry on the throne. Edward was in turn obliged to escape to the continent, but obtaining assistance from the Duke of Burgundy, returned and defeated Warwick at Barnet (1471). Margaret, collecting her partisans, fought the battle of Tewkesbury (1471), but was totally defeated. She and her son were made prisoners, and the latter, when led into the presence of the royal victor,

was killed. Henry soon after died or was murdered in the Tower, and Margaret remained in prison four years. Louis XI ransomed her for 50,000 crowns, and in 1482 she died.

Margaret of Valois, Queen of Navarre, sister to Francis I, of France, was born at Angoulême in 1492. She was brought up at the court of Louis XII, and married the Duke of Alençon in 1509, became a widow in 1525, and in 1527 was espoused to Henry d'Albret, count of Béarn and titular king of Navarre. From this time she resided at Béarn, assisting in the development of the resources of the small kingdom, and making it a center of liberal influence. Many Protestants took refuge in her territories; and her name is closely linked with those of Rabelais, Dolet, Marot and the leading men of the period. She herself possessed no ordinary culture, being credited with a knowledge of six languages and the authorship of several works, of which the chief were *Le Miroir de l'Ame Pécheresse*, printed in 1533 and condemned by the Sorbonne for its Protestant tendencies; the *Heptaméron*, a collection of tales in imitation of the *Decamerone* of Boccaccio, and first printed in 1559; and a collection of poems published in 1547 under the title of *Marguerites de la Marguerite des Princesses*. She died in 1549, leaving one child, Jeanne d'Albret, afterwards mother of Henry IV.

Margarine (mar'ga-rin), a mixture of stearine and palmitine, obtained from beef fat, lard, etc., and formerly regarded as a single fat. The name is now applied to an imitation of butter. See *Butterine*.

Margarita (mär-ga-rē'tä), an island belonging to Venezuela, in the Caribbean Sea; greatest length, 37 miles; greatest breadth, about 20. Margarita was discovered by Columbus in 1498. Pop. about 40,000.

Margate (mär'gāt), a seaport, municipal borough, and watering place in England, in the county of Kent, 64 miles east by south from London, pleasantly situated at the northern extremity of the Isle of Thanet. The town, which is a favorite resort with Londoners, is in the main well laid out with fine piers and promenades. The special features of Margate are its hospitals and its hotels; the only industry of importance, as apart from the entertainment of visitors, being its sea-fishing. Pop. (1911) 27,086.

Margay (mär'gā), a Brazilian animal of the cat kind, the *Felis Margay* or *F. tigrina*. It is about the size of the domestic cat, is of a pale fawn color, with black bands on the forepartes, and leopard-like spots on the hindparts and on the long bushy tail. It has been domesticated and made very useful in rat killing.

Margrave (mär'grāv; German *markgraf*, count of the mark), originally a commander entrusted with the protection of a *mark*, or country on the frontier. The margraves acquired the rank of princes, and stood between counts and dukes in the German Empire.

Maria Louisa (ma-rē'a lou-ē'za), second wife of Napoleon I; born in 1791; eldest daughter of the Emperor Francis I of Austria. Her marriage with Napoleon took place in 1810 after the divorce of Josephine, and in 1811 she bore him a son. After his overthrow she received in 1816 the duchies of Parma, Placenza and Guastalla, which she governed till her death in 1847. At Napoleon's death she made a morganatic marriage with her chamberlain, Count Neipperg.

Mariana (mä-re-ä'nä), Juan, a Spanish historian, born in 1537. He entered the Society of Jesuits, and for thirteen years taught theology with distinction in Rome, Sicily and Paris, returning to the Jesuits' College at Toledo in 1574, but his sentiments were too liberal to make his position comfortable. Besides a *History of Spain*, he wrote an essay *De Rege et Regis Institutione*, which was burned at Paris as countenancing the slaying of tyrants. He died in 1623.

Mariana Isles (or Marianne). See *Ladrones*.

Maria Theresa (ma-rē'a tā-rā'sä), Queen of Hungary and Bohemia, Archduchess of Austria, and Empress of Germany, daughter of the Emperor Charles VI, was born at Vienna in 1717, and in 1736 married Francis Stephen, grand-duke of Tuscany. On the death of her father in 1740 she ascended the throne of Hungary, Bohemia, and Austria, and a little later declared her husband joint ruler. Her accession was in accordance with the Pragmatic Sanction, but her claims were at once contested. Frederick the Great made himself master of Silesia; Spain and Naples gained possession of the Austrian territory in Italy; and the French, Bavarians and Saxons marched into Bohemia, carrying all before them. Charles Albert was proclaimed Archduke of Austria, and shortly after Emperor of Germany; and the young queen fled to Presburg, where she convoked the diet

and threw herself upon the sympathy of her Hungarian subjects. The French and Bavarians were speedily driven from her hereditary states; Prussia made a secret peace with the queen, who unwillingly abandoned Silesia and Glatz to Frederick; and though by the Treaty of Aix-la-Chapelle (1748) she was also compelled to give up the duchies of Parma, Piacenza, and Guastalla to Spain, her husband was elected emperor. During the time of peace which followed Maria Theresa, with the aid of her husband and the minister Kaunitz, made great financial reforms; agriculture, manufactures and commerce flourished, the national revenue greatly increased, and the burdens were diminished. The Seven Years' war again reduced Austria to a state of great exhaustion, but on its conclusion the empress renewed her efforts to promote the prosperity of her dominions. Her son Joseph was elected king of the Romans in 1764, and on the death of her husband, in 1765, she associated the young prince with herself in the government. In 1772 she joined in the dismemberment of Poland, obtaining Galicia and Lodomeria, while in 1777 she acquired Bukowina from the Porte, and in 1779, by the Peace of Teschen, gained the Inn valley. She died in 1780. Of the sixteen children which she bore to the emperor ten survived her, one of whom was the unfortunate Marie Antoinette.

Maria-Theresiopel. See *Theresiopel.*

Maria-Zell (mä-rē'ä-tsel), a small town of Austria in the extreme north of Styria, in the midst of mountains, near the Salza. Its celebrity is due to its possession of a handsome church, with a shrine containing a small black image of the Virgin and Child, to which numerous pilgrimage processions proceed annually from different parts of the Austrian dominions. The number of annual pilgrims is said to reach the great number of 200,000.

Marie Antoinette. See *Antoinette.*

Marie de Medici (mä-rē dē med'i-chē), the daughter of Francis II of Tuscany, born in 1573; married in 1600 to Henry IV of France. On the assassination of Henry she became regent, but proved utterly incompetent to rule. Her partiality for unworthy favorites caused her deposition and imprisonment. She became reconciled to her son, the weak Louis XIII, through Richelieu, who had possessed himself of the highest power, but was again imprisoned at Compiègne in 1630. Thence she escaped, and after wandering through several countries died in misery at Cologne in 1642.

Marie Galante (gä-länt), an island in the West Indies, belonging to France, 5 leagues from Guadeloupe, of which it is a dependency. The chief productions are sugar, coffee, tobacco, indigo and cotton. Pop. about 17,000, chiefly negroes.

Marienbad (mä'ri-en-bät), one of the most frequented and picturesque of the Bohemian watering-places, about 24 miles from Carlsbad, with saline and purgative springs. Pop. 4588.

Marienburg (mä'ri-en-burh), a town in Prussia, in the government of Danzig, and 27 miles southeast of the city of that name, on the Nogat. It was once the seat of the knights of the Teutonic order, and contains the fine castle of the grand masters. Pop. (1905) 13,095.

Marienwerder (mä'ri-en-ver-dèr), a town of West Prussia, on a height near the confluence of the Vistula and Nogat, 43 miles S. S. E. of Danzig. It has an ancient and handsome cathedral and an old castle, partly used as a courthouse, partly as a prison. Pop. (1905) 10,258.

Mariet'ta, a city of Ohio, capital of Washington Co., and the oldest town in the State. It is on the Ohio and the mouth of the Muskingum River, 80 miles S. E. of Zanesville. Here is Marietta College, founded in 1835. Petroleum wells in its vicinity furnish an extensive trade, and it has large flour mills, oil-well supply factory and chair company with numerous other industries. Pop. 15,000.

Marietta, a city, capital of Cobb Co., Georgia, 20 miles N. W. of Atlanta. It is on an elevated site and is a place of resort. It has various manufactures. Pop. 5949.

Mariette (mä-re-et), AUGUSTE EDWARD, a distinguished French Egyptologist, born in 1811. He was attached to the Egyptian museum in Paris, and after successful scientific expeditions to Egypt he was appointed by the viceroy inspector-general of monuments and curator of the museum at Boulak, with the title of Bey, and latterly of Pasha. He died in 1881. His works were very numerous.

Marignano (mä-rē-nyä'nō), or MELEGNANO (mel-e-nyä'nō), a town of North Italy, 10 miles southeast of Milan; famous for the defeat of the Imperialists by Francis I. in 1515, and for a victory of the French and Italians over the Austrians in 1859. Pop. 6666.

Marigold (mar'i-gōld), a name of several composite plants. The common marigold (*Calendūla officinālis*) is a native of France and of the more southern parts of Europe. It is an annual, from 1 to 2 feet high, with large deep-yellow flowers. It is as prolific as any weed, and was formerly used in broths and soups, partly to give color, and partly as an aromatic seasoning. It had also many medicinal virtues assigned to it, such as emmenagogue, diaphoretic, tonic, antispasmodic and alterative. Locally it is used as an embrocation for bruises. It is now but little used, as it has been replaced by other drugs. A number of species of this genus are indigenous to the Cape of Good Hope. The so-called African marigold and French marigold, common in flower borders, are both Mexican species, and have brilliant flowers. They belong to the genus *Tagētes*. The corn-marigold is *Chrysanthēmum segētum;* the fig-marigold is a *Mesembryanthēmum;* the marsh-marigold is *Caltha palustris*.

Marine Law. See *Commercial Law, International Law.*

Mariner's Compass. See *Compass.*

Marines (ma-rēnz'), a military force drilled as infantry, whose especial duty is to serve on board ships of war when on commission, and also on shore under certain circumstances. They are trained to seamen's duties, but do not go aloft, being mainly employed in sentry duty, etc. The force was first embodied by an order in council in 1664 as a nursery for seamen to man the fleet. The United States and Britain are the only nations which employ marines in this manner.

Marinette, a city, county seat of Marinette Co., on Green Bay, Wisconsin. Bridges here cross the Menominee River to Menominee, Michigan. It has numerous saw mills, the lumber interests being large; also large fishing interests, and manufactures of pianos, cutlery, excelsior, boxes, hoops, novelties, flour, paper and pulp, etc. Pop. 15,500.

Marino (ma-rē'nō), San, a town and small independent republic in Italy. The territory consists of a craggy tract, with an area of about 22 square miles, on the borders of the provinces of Forli and Urbino, near the Adriatic coast. It is the last surviving representative of the Italian republics. At the head of the government are two 'captains regent' elected for six months. There is a militia of 950 men. The town San Marino occupies the crest of a rocky hill 2200 feet in height, and is accessible only by the road from Rimini. The principal inhabitants, however, reside in the hamlet of Il Borgo, at its foot. Pop. 7307.

Mario (mä-re-ō'), Giuseppe, Marquis di Candia, a famous tenor, born at Turin in 1808. In 1830 he became an officer in the Sardinian army, but to escape the punishment of some youthful freak threw up his commission and fled to Paris. There in 1838, under the assumed name of Mario, he accepted an appointment as first tenor of the opera, and a year later was secured for the Théâtre Italien. For many seasons he divided his time between London, Paris and St. Petersburg. He died in 1883.

Mariolatry (mar-i-ol'a-tri), a term applied by Protestants with a sense of opprobrium to the worship of the Virgin Mary.

Marion (mar'i-on), Francis, a Revolutionary soldier, was born in Winyaw, South Carolina, in 1732. His career as a partisan soldier was most brilliant, and he ranks among the most famous of American soldiers, having made himself a hero of romance by the character of his exploits. He died in 1795.

Marion, a city, capital of Williamson Co., Illinois, 18 miles E. of Carbondale. It is a shipping point for farm products. Pop. 7093.

Marion, a city of Indiana, capital of Grant Co., on the Mississinewa River, 40 miles S. E. of Logansport. It is in a farming and fruit-raising district. Its industries include the manufacture of motors, automobiles, shoes, insulated wire, glass and iron works, rolling mill, etc. Pop. 25,000.

Marion, a city of Ohio, county seat of Marion County, 46 miles north of Columbus, on the Pennsylvania, Erie, Hocking Valley and Big Four railroads. In the vicinity are lime and stone industries, and it has large manufactures, including steam-shovel works, malleable iron works, flour and lumber mills, etc. Pop. 25,000.

Mariotte (mä-re-ot), Edme, a French mathematician and natural philosopher, born in Burgundy in 1620, served as priest at St. Martin-sous-Beaune, became member of the Academy of Sciences in 1666, and died in 1684. He followed closely in the steps of Galileo and Torricelli, and made many important discoveries in hydrostatics and hydraulics. The law according to which the density of the atmosphere is regulated was discovered by him and Boyle independently. See *Boyle's Law.*

Mariposa (mar-i-pō'sä), a large and beautiful fish found in the open Atlantic and Pacific Oceans.

Mariposa (*Lampris luna*).

Mariput (mar'i-put), the zoril, an animal of the genus *Viverra*, the *V. zorilla*, a species of civet.

Maritime Law. See *Commercial Law.*

Maritza (mä-rē'tsa; the ancient *Hebrus*), a river of Turkey, rising in the Balkans and flowing through Eastern Roumelia, southeast to Adrianople, where it bends to the southwest, and falls into the Ægean Sea by the Gulf of Enos. It is over 300 miles long, and navigable to Adrianople, about 100 miles from its mouth.

Maritzburg. See *Pietermaritzburg.*

Mariupol (mä-ri-ō'pol), a town and seaport of S. Russia, in the government of Ekaterinoslav, on the Sea of Azof. Pop. 52,770.

Marius (mä'ri-us), Caius, a Roman general, born in 157 B.C., of obscure parents, at the village of Cereatæ, near Arpinum. He served with distinction at Numantia in 134 B.C. under Scipio Africanus; was made tribune of the people in 119, and acquired much popularity by his opposition to the nobles. In 115 B.C. he was appointed prætor, and a year later proprætor of Spain, which he cleared of robbers; he also increased his influence by his marriage with Julia, the aunt of Julius Cæsar. In 109 B.C. he accompanied the Consul Q. Cæcilius Metellus as his lieutenant to the Jugurthine war. He brought this war and the war in Transalpine Gaul against the Teutons to a victorious close; and six times was chosen consul. On the outbreak of the war against Mithridates, Marius, who had long been jealous of Sulla, endeavored to deprive him of his command, and in the struggle which followed was compelled to flee from Italy. After hairbreadth escapes he landed in Africa amid the ruins of Carthage, and remained there until recalled by Cinna, who had headed a successful movement in his favor. In company with Cinna he marched against Rome, which was obliged to yield, the entry of Marius and his followers being attended with the massacre of most of his chief opponents. On the completion of the term of Cinna's consulship he declared himself and Marius consuls (B.C. 86), but the latter died seventeen days later at the age of seventy.

Marivaux (mä-rē-vō), Pierre Carlet de Chamblain de, a French dramatic writer and novelist, born at Paris in 1688. After writing three or four novels and a series of articles of the 'Spectator' type from 1720 onwards he produced a large number of plays, the best being the *Surprise de l'Amour* (1722), the *Jeu de l'Amour et du Hazard* (1730), and *Les Fausses Confidences* (1737). They were characterized by a certain skilfully embroidered phrasing which gave rise to the term *marivaudage*, but they have also no little charm of feeling as well as of intellectual finesse. Two uncompleted novels, *Marianne* and the *Paysan Parvenu*, contain much excellent work. He was made an academician in 1736, and died in 1763.

Marjoram (mar'jō-ram; *Origānum*), a genus of plants of the nat. order Labiatæ. The common marjoram (*Origānum vulgāre*), a native of Britain, is a perennial under-shrub growing among copsewood in calcareous soils. The leaves are small and acute; the flowers reddish, in clustered spikes. Sweet marjoram (*O. Majorāna*) is a biennial, cultivated in gardens. As soon as it blossoms it is cut and dried for culinary use, being employed as a seasoning.

Mark, a term formerly used in England for a money of account, and in some other countries for a coin. The English mark was two-thirds of £1 sterling, or 13*s.* 4*d.*; and the Scotch mark, or merk, was two-thirds of £1 Scots, or 13 1/3*d.* sterling. In the coinage of the German Empire the *mark* is a coin of nearly the same value as the English shilling. A *mark banco* used to be a money of account in Hamburg equal to nearly 1*s.* 6*d.*

Mark, St., the Evangelist, according to the old ecclesiastical writers,

the person known in the Acts of the Apostles as 'John, whose surname was Mark' (Acts, xii, 12, 25), for many years the companion of Paul and Peter on their journeys. His mother, Mary, was generally in the train of Jesus, and Mark was himself present at a part of the events which he relates in his gospel, and received his information partly from eyewitnesses. He was the cousin of Barnabas (Col., iv, 10), and accompanied Paul and him to Antioch, Cyprus and Perga in Pamphylia. He returned to Jerusalem, whence he afterwards went to Cyprus, and thence to Rome. He was the cause of the memorable 'sharp contention' between Paul and Barnabas. Of the close of his career nothing is known; and it is by no means certain even that the various passages, on which the church has based the biographical notes already cited, uniformly refer to the same individual. See *Gospels*.

Mark Antony. See *Antonius*.

Markets. See *Fairs*.

Markham (mark'am), CLEMENTS ROBERT, an English geographer and traveler, was born in 1830, and educated at Westminster School. He was in the navy in 1844-51, after which he traveled in Peru, and published *Cusco and Lima* (1856). In 1860-61 he visited Peru and India in connection with the establishment of cinchona plantations in the latter country, one result being the publication of *Travels in Peru and India* (1862). In 1865-66 he visited Ceylon and India, and in 1867-68 accompanied the Abyssinian expedition, an account of which he wrote. He was made C.B. in 1871. He has held several government appointments. Other works of his are: *Life of the Great Lord Fairfax; Sketch of the History of Persia; Peruvian Bark; The War Between Peru and Chile*, etc. He was knighted in 1896, and died Jan. 30, 1916. His brother, ALBERT HASTINGS MARKHAM, born in 1841, was an Arctic voyager and writer on polar research and was made a rear-admiral in 1892.

Markham, EDWIN (1852-), an American poet, born at Oregon City, Oregon. In his boyhood days he was taken to California and there worked at farming and sheep-herding and blacksmithing. He was educated at San José Normal School and two western colleges; was superintendent of public schools till 1899, in which year his striking poem, 'The Man with the Hoe,' was written. He had written verses for many years, but it was not until 'The Man with the Hoe' appeared that he won nation-wide fame. He subsequently devoted himself to writing and lecturing. In 1900 he published 'The Man with the Hoe, with Notes by the Author.' 'Lincoln and Other Poems' appeared in 1901. He wrote a number of essays including 'The Poetry of Jesus,' 'The Social Conscience,' 'The Hoe-Man in the Making,' 'The Children in Bondage.' He compiled and edited 'Remarkable Writings of Thomas Lake Harris.'

Markham, WILLIAM (1635-1704), an English colonial governor in America. He was a first cousin of William Penn, who in 1681 appointed him deputy governor of Pennsylvania. He represented the colony in the boundary dispute with Maryland. He was deputy governor of the Territories (Delaware) in 1691. He had many quarrels with Penn and was charged with connivance with pirates and privateers who took refuge in Delaware Bay.

Markhor (mär'kôr), a wild goat native to Asia. It is closely related to the domestic variety, but has long massive spirally twisted horns. There are four subspecies, distinguished chiefly by variation in the shape of the horns. The extremes are represented by the Astor and Suliman markhor. In the [illegible] which is named from the village of [illegible]cor in northwestern Kashmir, the horns form an open spiral and [illegible] long and massive; in the second, name[illegible] [illegible]m the Suliman range in which it is fo[illegible] the horns are short and straight with th[illegible] keel running around them like the thread of a screw.

Marking-nut (*Semecarpus Anacardium*), a tree of the cashew family, belonging to India, having a fruit that is roasted and eaten. The black juice of the unripe fruit serves to make a marking-ink.

Markirch (mär'kirh), or ST. MARIE-AUX-MINES, a town of G[illegible]many, in Upper Alsace, in a valley on both sides of the river Leber. [illegible]p. 12,372.

Mark Twain. See *Clemens, Samuel Langhorne*.

Marl, an earthy substance essentially composed of carbonate of lime and clay in various proportions. In some marls the argillaceous ingredient is comparatively small, while in others it abounds, and furnishes the predominant characters. The most general use of marl is to improve soils. The fertility of any soil depends in a great degree on the suitable proportion of the earths which it contains; and whether a calcareous or an argillaceous marl will be more suitable to a given soil may be determined with

much probability by its tenacity or looseness, moisture or dryness.

Marlboro (märl'bur-ō), a city of Middlesex Co., Massachusetts, 25 miles W. of Boston. It has extensive manufactures of boots and shoes, also produces shoe machinery, electric appliances, automobiles, hose-pipe, etc. Pop. 14,579.

Marlborough (marl'b'ruh), a municipal borough of England, in Wiltshire, on the Kennet, a tributary of the Thames. There is here a flourishing grammar school, Marlborough College, opened in 1845. Pop. 4401.

Marlborough, a provincial district, New Zealand, occupying the northeast portion of South Island, and bounded by the sea and the provincial district of Nelson. Its extreme length is 130 miles, breadth 60 miles; area, about 3700 sq. miles. In the south of the district are the Wairau Plains, one of the finest sheep tracts in New Zealand. Capital, Picton, situated on an arm of Queen Charlotte Sound. Pop. 11,113.

Marlborough, JOHN CHURCHILL, DUKE OF, an English general and statesman, second son of Sir Winston Churchill; was born at Ashe, in Devonshire, in 1650. At the age of twelve he became page to the Duke of York (afterwards James II), by whom at sixteen he was appointed an ensign. He

Duke of Marlborough.

was present at the siege of Tangiers, and soon after his return rose to the rank of captain. In 1672 he accompanied the Duke of Monmouth to assist Turenne against the Dutch. At the siege of Maestricht he distinguished himself so highly as to obtain the public thanks of the king of France. On his return to England he was made lieutenant-colonel, and through the influence of his sister Arabella, mistress of the Duke of York, his advancement was rapid. He had a regiment of dragoons presented to him, and strengthened his influence at court by his marriage with Sarah Jennings, an attendant upon the princess, afterwards Queen Anne. In 1682 he obtained the title of Baron of Eyemouth, and a colonelcy in the guards. On the accession of James II he was sent as ambassador to France, and soon after his return was created Baron Churchill of Sundridge, and raised to the rank of general. The same year he suppressed the rebellion of the Duke of Monmouth. On the arrival of the Prince of Orange he joined him at Axminster, and was rewarded by the earldom of Marlborough, and the appointment of commander-in-chief of the English army in the Low Countries. The following year he served in Ireland, where he reduced Cork, Kinsale, and other places. In 1691 he was suddenly dismissed from all his employments and committed to the Tower on the charge of high treason, but soon obtained his release; though it appears that the suspicions against him were not without foundation. On the death of Queen Mary he was made a privy-councilor, and appointed governor to the young Duke of Gloucester; and in 1701 was created by King William commander-in-chief of the English forces in Holland, and also ambassador plenipotentiary to the states-general. Still greater honors awaited him on the accession of Queen Anne in 1702, when he was created captain-general of all the forces at home and abroad, and sent plenipotentiary to The Hague, where he was also made captain-general by the states. In the campaign of the same year he drove the French out of Spanish Guelders, and took Liège and other towns, for which he was created Duke of Marlborough. In 1704 he stormed the French and Bavarian lines at Donauwörth, and in the same year, in conjunction with Prince Eugene, gained the victory of Blenheim over the French and Bavarians, headed by Marshal Tallard and the Elector of Bavaria. The nation testified its gratitude by the gifts of the honor of Woodstock and hundred of Wotton, and erected Blenheim Palace for him, one of the finest seats in the kingdom. During the year 1705 he conducted successful negotiations at the courts of Berlin, Hanover and Venice, and the new emperor, Joseph, presented him with the principality of Mindelheim. On the victory of Ramillies, 1706, a bill

was passed to settle his honors upon the male and female issue of his daughters. In the campaign of 1707 his antagonist was the famous Duke de Vendôme, over whom he gained no advantage, and on his return, found that his popularity at court was on the decline. In 1708, in conjunction with Prince Eugene, he gained the battle of Oudenarde. In 1709 he defeated Marshal Villars at Malplaquet, though at a cost ill repaid by the capture of Mons. On the next visit of the duke to England he found that the duchess, by her great arrogance, had so disgusted the queen that a total breach had ensued. Early in 1710 he returned to the army, and with Prince Eugene gained another victory over Villars. During his absence a new ministry, hostile to himself, was chosen, and on his return his command was taken from him, and a prosecution commenced against him for applying the public money to private purposes. He repaired in disgust to the Low Countries in 1712, but returned a short time before the queen's death, and on the accession of George I was reinstated in the supreme military command. Retiring from all public employments, his mental faculties gradually decayed, and he died at Windsor Lodge in 1722, leaving four daughters, who married into families of the first distinction.—His duchess, SARAH JENNINGS, born in 1660; died in 1744, has been almost equally celebrated for her boundless ambition and avarice. The title fell to the descendants of one of their daughters, who have assumed the name of Churchill.

Marline-spike (mar'lin spik), an iron pin tapering to a point, and principally used on board ship to separate the strands of a rope in order to introduce the ends of some other through the intervals in the act of knotting or splicing; it is also used as a lever in various operations.

Marlitt, E., the pseudonym of the German novelist, Eugenie John, born at Arnstadt, Thuringia, in 1829; died in 1877. She was for a time on the operatic stage and after 1863 wrote a long series of novels, many of which were translated into English.

Marlow. See *Great Marlow.*

Marlowe (mar'lō), CHRISTOPHER, an English poet and dramatist, born at Canterbury in 1564, and educated at Cambridge, whence he proceeded M.A. in 1587. He afterwards settled in London, and became an actor as well as a writer for the stage. Besides six tragedies of his own composition, the best known of which are *Tamburlaine the Great, Edward II, Dr. Faustus,* and the *Jew of Malta,* he left a translation of the *Metamorphoses of Ovid,* and some lyrical poems, among them the *Passionate Shepherd;* another poem, *Hero and Leander,* was completed by George Chapman. He appears to have led a reckless, dissipated life, and died in 1593, from a wound received in a quarrel with a serving-man at Deptford. Marlowe was by far the greatest dramatic writer before Shakespeare.

Marlowe, JULIA, actress, born at Caldbeck, England, in 1870, and was taken to the United States at five years of age. She began her theatrical career with child parts, her first mature part being Parthenia, in *Ingomar,* in 1888. Since that date she has been a favorite in Shakespearean and other leading parts. She married Robert Taber, and later, Edward H. Sothern.

Marly (mar-lē) or MARLY-LE-ROI, a village of France, on the Seine, 10 miles west of Paris. It contained a royal castle, built by Louis XIV and destroyed after the revolution.

Marmalade (mar'ma-lād; Portuguese, *marmelo,* a quince), a jellied preparation made from quinces, peaches, apricots, oranges, etc., and portions of their rinds, the most common kind being made from bitter or Seville oranges.

Marmalade-tree, MARMALADE-PLUM (*Lucuma mammosa*), a tree of the order *Sapotaceæ,* a native of the West Indies and tropical America, valued for its fruit, the pulp of which resembles marmalade. It is also called *Mamee-sapota.*

Marmala-water (mar'ma-la), a fragrant liquid distilled in Ceylon from the flowers of the Bengal quince (*Belos Marmelos*), and much used by the natives as a perfume for sprinkling.

Marmande (mär-mänd), a town of France, department of Lot-et-Garonne, on the Garonne, 50 miles above Bordeaux. Pop. (1906) 9748.

Marmont (mär-mōn), AUGUSTE FRÉDÉRIC LOUIS VIESSE DE, Duke of Ragusa and Marshal of France, was born in 1774 at Chattillon-sur-Seine, the son of an ex-officer in the army. In 1792 he joined the artillery, and at Toulon became acquainted with Napoleon Bonaparte, who chose him for his aide-de-camp. In Italy he greatly distinguished himself, and after the battle of Marengo attained the rank of general of division. He obtained the title of Duke of Ragusa for his defense of Ragusan territory against the Rus-

sians and Montenegrins. He was present at Wagram, and after the truce of Znaim was made field-marshal. He afterwards governed the Illyrian Provinces till 1811, when he succeeded Masséna as commander in Portugal. In conjunction with Soult he raised the siege of Bajadoz, but was ultimately badly beaten at Salamanca by Wellington. In the campaign of 1813 he held the command of an army corps in Germany, and fought in the battles of Lützen, Bautzen and Dresden. In 1814 he fought a final battle under the walls of Paris, but opposition appearing fruitless he surrendered to the allies. This proceeding was one main cause of Napoleon's immediate abdication, and brought Marmont into favor with the Bourbons. After the restoration Louis XVIII made him a peer of France, but he was compelled to withdraw from Paris by the revolution of 1830, and his name was struck off the army list. He accompanied Charles X in his exile, and afterwards traveled, publishing the results of his travels in 1837-39. He also wrote *Esprit des Institutions Militaires* and his own memoirs. He died at Venice in 1852.

Marmontel (mär-mon-tel), JEAN FRANÇOIS, a French writer, born in 1723; died in 1799. After acting as a teacher of philosophy in a seminary at Toulouse he in 1745 went by Voltaire's advice to Paris, where his tragedies *Denys le Tyran* (1748) and *Aristomène* (1749) brought him considerable celebrity. By the favor of Madame Pompadour he was appointed to a post in connection with the royal buildings. In 1761 he published his first series of *Contes Moraux* ('Moral Tales'). In 1763 he succeeded Marivaux as a member of the French Academy, and he was appointed historiographer of France. In 1783 he was elected secretary to the French Academy. On the breaking out of the revolution he retired to a cottage in Normandy, where he wrote a new series of tales and *Memoirs* of his own life. He also wrote *Bélisaire* (1767), *Les Incas* (1777), articles for the *Encyclopédie*, etc.

Marmora (mär'mo-ra), or MARMARA, SEA OF (anciently *Propontis*), an inland sea, lying between European and Asiatic Turkey, communicating with the Mediterranean by the Dardanelles, and with the Black Sea by the Bosporus; length from Gallipoli to the head of the Gulf of Izmid, 177 miles; greatest breadth, rather more than 50 miles. It contains several islands, of which the largest is Marmora, famous for its quarries of marble and alabaster.

Marmose (mär'mōs), a marsupial quadruped resembling the opossum, but less, being only about 6 inches in length exclusive of the tail; the

Marmose (*Didelphys murina*).

Didelphys murina of Cayenne, *D. dorsigĕra* of Surinam. It carries its young about with it on its back.

Marmoset (mär'mu-set), a name of several small South American monkeys, the smallest of the monkey tribe. They are agile in their movements, possess long, non-prehensile tails, and have a thick woolly fur. They bear a close resemblance to squirrels in general appearance, feed upon fruit and insects, and occasionally upon the smaller birds and their eggs. The marmoset family (Hapalidæ) is generally divided into two genera, *Hapăle* and *Midas*, each including a great number of distinct species, the most familiar being the Black-eared marmoset (*Hapale Jacchus*) and its varieties *H. penicillāta*, *H. vulgāris*, etc. These are also known by the name of Ouistiti.

Marmot (mär'mut), a rodent quadruped of the genus *Arctŏmys*, classed with the squirrels. They are thick-bodied, have short tails and short legs, and live in burrows, which are generally excavated in mountainous situations, and consist of a series of galleries in which whole communities reside. During the winter they lie dormant. The marmots inhabit Europe, Northern Asia and North America. The Alpine or European Marmot (*Arctŏmys Alpinus*) is found in plenty on the Alps, and averages a rabbit in size. The prairie-dog or prairie-marmot, or wistonwish, of North America (*Cynŏmys Ludoviciānus*) is the most familiar American species. Another species found in America is the woodchuck of the middle American states (*A. monax*).

Marne (märn; Latin, *Matrŏna*), a river of France, the largest tributary of the Seine on the right, rises in the department of Haute-Marne, and enters the Seine about 3 miles above Paris. It has a course of about 280 miles, of which 210 miles are navigable.

Marne, a department of France, bounded by Ardennes, Aisne, Seine-et-Marne, Aube, Haute-Marne and Meuse; 67 miles long by 60 miles broad; area, 3158 square miles. About two-thirds of it is arable, and the crops, chiefly rye and oats, more than supply the consumption. The vine is largely cultivated; but though the champagnes of Rheims and Epernay are famous, the general produce of the vineyards is indifferent. Châlons-sur-Marne is the capital. Pop. (1906) 434,157.

Marne, Haute (Upper Marne), a department of France, bounded by Meuse, Marne, Aube, Côte d'Or, Haute-Saône and Vosges; area, 2401 sq. miles. Ramifications of the Vosges make the greater part of the surface mountainous, and the elevated plateau of Langres in the department forms part of the great European watershed. The principal rivers are the Marne, with its tributaries, and the Meuse. The ordinary agricultural crops equal the consumption, and the wine is partially exported. The forests are extensive, and furnish fuel for smelting the ironstone of the department. The coal-measures are partially developed, but the prevailing rock is Jura limestone. Chaumont is the capital. Pop. 221,888.

Marne, Battle of the, the great conflict which marked the climax of the German advance into France in the Great European War, and their retreat to the serried array of trenches to which the fighting was to become confined. This battle is regarded by many as the turning point in the war so far as the struggle in the west was concerned, and the rescue of France from a situation of imminent danger. In the direction of the river Marne, with Paris as their goal, marched the great German hosts after they had overrun Belgium in August, 1914, the French and British armies retreating before their seemingly irresistible advance. It was a critical period in the history of France, one in which the Germans, estimated at 900,000 in number and flushed with victory over the Belgians, faced 1,000,000 French and British, as yet practically untried on the battlefield, but fully recognizing the need of a desperate defense. The British wing of the allied armies, small in number, was struck at Mons on August 28 by a greatly superior force and hastily fell back, barely escaping disaster; while the French were stubbornly retreating before the powerful German forces which had fought their way to the Paris-Verdun line, and were sturdily driving forward towards the French capital. General Joffre, the French commander-in-chief, while retreating, did so only for strategic reasons, having it in view to halt and give battle in a selected position behind the waters of the Marne, where he could avail himself of the large body of troops occupying the outlying defenses of Paris. On reaching this position in early September, he began a new disposition of his forces, shifting his center eastward. General Von Kluck, commanding the right wing of the invaders, and marching directly upon Paris, made a sudden shift in the same direction, doubtless deeming it more important just then to annihilate the opposing forces than to occupy the capital. The latter could wait.

On September 5, Von Kluck crossed the Marne above Meaux, leaving a strong force on the west bank of the Ourcq to protect his right wing. East of him lay Von Bulow's army, the remaining German armies being disposed to support those named. It was a formidable force which Joffre thus faced when he halted his retreat with the purpose of striking the blow which he had in view in his retreat. Paris, indeed, was in such danger that the official staff of the government had been hastily transferred to Bordeaux, and on September 6 the forces assigned for its protection were hastily transferred to the front, leaving the Paris forts by every means of transportation available. The day designed for the launching of Joffre's forces against the Germans had been reached and the two great armies faced each other along a wide front. Sunday, September 6, 1914, was a critical date in the history of France. Joffre's attitude of defense was about to be changed for an attitude of offense and no man could safely predict the issue. If the German army would force its way through the opposing line Paris would fall once more into the hands of a powerful foe and an immense advantage be gained, even if this event should not prove fatal.

The unexpected forward movement of the French forces upon Von Kluck's flank caused him in all haste to check his advance across the Marne and form new plans to meet the advancing foe. This led to one of the events that decided the fate of the battle. The British had joined in the advance, striking Von Kluck's right and center, and by nightfall their line was firmly fixed across and south of the Grand Morin. The important result of this day's manœuvres was that Von Kluck's right had been turned, compelling him to present two fronts to the advancing foe. September 7 was a day marked along the whole line of desperate fighting. Von

Kluck bearing the brunt of the most furious assaults and being in the end obliged to draw back from the Grand Morin. The following day marked a general turning of the tide, its most important event being the capture of Montmarail, in the Petite Morin, by D'Esperay, a feat which led to the exposure of Von Bulow's right flank. This fact was quickly discovered by General Foch, who pushed his left wing forward during the night, gaining a position well to the west of Von Bulow. Far more important, however, was a signal fact discovered by his air scouts. In some way not easily explained Von Bulow's left and Von Housen's right had been separated, leaving a gap into which Foch daringly pushed his way between the two German armies.

September 9 was a day of heavy rain, but by its end the German rights had been hopelessly broken, Foch and D'Esperay occupying the gap that had been made, and driving two of Von Bulow's corps into an area of marshy ground. They got to higher ground in the next morning, but had lost many men taken prisoners and at least 40 guns. Von Bulow's left and Von Housen's right were now in similar straits, the French lines between them, well equipped with artillery, causing serious loss of life, while the German armies were driven back to right and left and their lines hopelessly separated. Reinforcements at this time reached the German lines, but they were unable to check the French advance, while the Crown Prince's army sought in vain to drive a wedge between the French right and the front of the Meuse. By the evening of the 10th the battle was practically at an end and the French victory assured. The retreat continued during the next day and on the 12th the Germans reached the fortified ground they had previously prepared on the line of the Aisne. The great Teutonic drive had signally failed; the French were the victors; Paris was saved.

Maronites (mar'on-its), a sect of eastern Christians, whose origin was a consequence of the Monothelite controversy. (See *Monothelites.*) On the condemnation of the Monothelites by Anastasius, early in the eighth century, the remnant of this party survived in the *Maronites*, so named from their founder Maron—a society of monks in Syria, about Mount Lebanon, which is mentioned as early as the sixth century. They became a warlike mountain people, who defended their political and religious independence boldly against the Mohammedans. Their political constitution is that of a military commonwealth. Since the twelfth century they have several times submitted to the pope and joined the Roman Catholic Church. See *Druses.*

Maroons (ma-rōns'), the name given to runaway negroes in Jamaica and in some parts of South America. In many cases they rendered themselves formidable to the colonists. When Jamaica was conquered by the English in 1655 about 1500 slaves retreated to the mountains, and continued to harass the island till 1795, when they were reduced by the aid of bloodhounds.

Maros (mä'rosh), a river of Hungary which enters the Theiss at Szegedin after a course of 400 miles.

Maros-Vásárhely (mä'rosh-vä'sär-hel-y'), a town of Transylvania, on the Maros, in a beautiful and fertile district, 54 miles N. N. E. of Hermannstadt. Pop. 19,522.

Marot (mä-rō), CLEMENT, a French epigrammatist and writer of light lyrical pieces, born at Cahors in 1495. He went to Paris as page of Margaret of France, duchess of Alençon, whose brother Francis I he afterwards accompanied to the Netherlands. In 1525, having followed the king to Italy, he was wounded and made prisoner in the battle of Pavia. After his return to Paris he was suspected, possibly on the charge of his mistress Diana of Poitiers, of being favorable to Calvinism, and was thrown into prison. During his confinement he wrote *L'Enfer*, a satire on his judges; and a modernized edition of the *Romance of the Rose;* and the king finally set him at liberty. His connection with Margaret, now Queen of Navarre, with whom he had quarreled, was renewed, but he soon went to Italy, and thence to Geneva (1543), where Calvin succeeded in making him a nominal proselyte. He recanted, however, and returned to Paris; but being again in danger as a suspected heretic, he fled to Turin, where he died in poverty in 1544. His translation of the Psalms, made in conjunction with Beza, was long used in the Protestant churches in France, though his own life was marked by complete religious indifference. The combination of satirical humor, naïveté, and delicacy exhibited in his works is known as the *Style Marotique*, of which La Fontaine furnishes the best subsequent examples.

Marque (mark), LETTERS OF, or LETTERS OF MARQUE AND REPRISAL, a license or extraordinary commission granted by a sovereign or the supreme power of one state to the citizens of this state to make reprisals at sea on the subjects of another, under pretence of indemnification for injuries received;

that is, a license to engage in privateering. Letters of marque were abolished among European nations by the Treaty of Paris of 1856. The United States of America was invited to accede to this agreement, but declined.

Marquesas (mär-kā'säs; Fr. *Marquises*), an island group in the South Pacific Ocean, lat. 8° to 11° s.; lon. 138° 30′ to 143° w., belonging to France, composed of twelve islands and islets. Their coasts are generally inaccessible, rising from the water like walls; but in Nukahiva, the largest, there are one or two excellent natural harbors. Hiva-oa is the next in size. Some of their mountains reach an elevation of about 3500 feet; the intervening valleys are singularly fertile and picturesque. Their principal productions are yams, bread-fruit and cocoanuts. They were discovered in 1595.

Marquetry (mär'ket-ri; Fr. *marqueterie*), inlaid cabinet work in which thin slices of different colored wood, sometimes of ivory, pearl, shell, or metal, are inlaid on a ground usually of oak or fir, well seasoned to prevent warping.

Marquette (mär-ket), Jacques, Jesuit missionary and explorer in North America, born in Picardy, France. After spending several years in mission work, he led a party down the Illinois and the Mississippi to the Arkansas. Died in 1675.

Marquette, a city and summer resort, capital of Marquette County, Michigan, on the shore of Lake Superior, 430 miles N. of Chicago. It has a good harbor and immense docks for the shipment of iron ore, which is abundant in the county. There is also an extensive brownstone quarry, large machine shops and blast furnaces, railroad shops, woodworking factories, trap rock quarries, etc. There is a state normal school, a state prison, and a house of correction. Pop. 11,503.

Marquis (mär'quis), Marquess (Fr. *marquis;* Ital. *marchese;* Ger. *markgraf*), a title of honor next in dignity to that of duke, first given to those who commanded on the marches or frontiers of countries. The title was first introduced into England by King Richard II, in the year 1387, but fell into disuse until the reign of Edward VI, who created the Marquisate of Winchester in 1551. The corresponding female title is *marchioness.*

Marriage (mär'ij), a solemn contract between a man and woman, by which they are united for life and assume the legal relation of husband and wife. Different localities have different forms of the institution, the most broadly marked of which are connected with the right to have only one wife—*monogamy*, or a plurality of wives—*polygamy*. *Polyandry*, by which a woman may have several husbands, is known to have existed in ancient times, and still exists in certain localities, as in Thibet. Among the most civilized communities monogamy is the prevailing practice. Though the Church of Rome ranks marriage among the sacraments, and religious observances are almost everywhere customary on its celebration, the law regards it as nothing more than a civil contract. To render valid the civil contract constituting marriage in England and the United States, it is requisite that the free will of each of the parties should be spontaneously exercised, and that each should be capable of giving an intelligent consent. By common law the age of consent is fourteen for males and twelve for females. This prevails in England, and in the United States except where changed by State legislation. In the United States marriage is regarded as being entirely based on contract or on the present mutual consent of the parties; solemnization by a clergyman or by a magistrate, the presence of witnesses, and all the customary forms and ceremonies being simply convenient means of perpetuating the evidence of the contract.

Marrow. See *Medulla.*

Marryat (mär'ri-at), Frederick, an English novelist and naval officer, born in 1792. In 1806 he entered the navy as midshipman on board the *Impérieuse*, commanded by the celebrated Cochrane, afterwards Lord Dundonald; and having served with distinction and attained the rank of captain he retired in 1830. His first attempt in literature was made in 1829, by the publication of *Frank Mildmay*. His success led to an extensive series of works of the like kind, including *The King's Own*, *Peter Simple*, *Jacob Faithful*, *Japhet in Search of a Father*, *Midshipman Easy*, *The Pacha of Many Tales*, and others. He was also the author of a *Code of Signals* for the Merchant Service (1837). Captain Marryat's novels are remarkable for broad humor and fidelity of description as regards sea life, but he cannot be said to be a great master of plot. He died at Langham, Norfolk, in 1848. One of his daughters, Florence Marryat, gained distinction as a novelist. See *Ross-Church.*

Mars (märz), the Roman god of war, at an early period identified with

the Greek *Arēs*, a deity of similar attributes. Like Jupiter he was designated *father*, and was regarded in particular as the father of the Roman people, Romulus and Remus being the fruit of his intercourse with Rhea Sylvia. Several temples at Rome were dedicated to him. His service was celebrated not only by particular *flamines* devoted to him, but by the College of the Salii, or priests of Mars. The month of March, the first month of the Roman year, was sacred to him. As the tutelary deity of Rome he was called *Quirinus*, in his character as the god of war *Gradivus* (the striding). Ares, the Greek god of war, was the son of Zeus (Jupiter) and Hera (Juno). He is represented as terrible in battle, but not as invulnerable, since he was wounded at various times by Heracles, Diomedes and Athena. He is represented as a youthful warrior of strong frame, either naked or clothed with the chlamys. The chief seats of the worship of Ares were in Thrace and Scythia.

Mars, the planet which lies next beyond the orbit of the earth. It moves around the sun in 686.9797 of our mean solar days, at the average distance of 139,312,000 miles, its greatest and least distances being 152,284,000 and 126,340,000 miles; its orbit is inclined to the ecliptic at an angle of 1° 51′ 5″; its distance from the earth varies from about 35,000,000 to 244,000,000 miles; it rotates on its axis in 24 hours 37 minutes 22 seconds; the inclination of its axis, or the angle between its equator and its orbit, is 28°; its diameter is about 4400 miles. Its surface bears some degree of resemblance to that of the earth, though with variations of singular character. These consist of canal-like markings covering much of the surface and which have given rise to much controversy, some astronomers contending that they are irrigation canals of artificial origin, and indicate that Mars is inhabited. This theory however, is not widely accepted. The reddish hue of Mars is one of its characteristic features. About every 8 years 7 months it is in perihelion and perigee at the same time, and has a wonderful brilliancy. At its poles are white portions, which decrease and increase in size at the beginning and end of the Martial summer, so that the poles are supposed to be surrounded with snow, though much doubt is felt regarding this. In 1877 two satellites, both very small bodies, were discovered by Professor Hall of the Naval Observatory, Washington. The outer one, 14,500 miles distant from the center of Mars, revolves round the planet in a period of 30 hours 14 minutes; the inner one, 5800 miles from the center of Mars, has a period of 7 hours 38 minutes.

Mars, Anne Françoise Hippolite Boutet, a French actress, born at Paris in 1779. As *Célimène* in Molière's *Misanthrope*, and *Elmire* in *Tartuffe*, as well as in several similar characters in the plays of Marivaux, she was superb. Louis XVIII settled on her, as well as on Talma, a pension of 30,000 francs. She quitted the stage in 1841, and died at Paris in 1847.

Marsala (mär-sä'lä), a seaport of Sicily, on the promontory of Cape Boeo, 18 miles s. s. w. of Trapani. The principal edifice is a large cathedral. The harbor has been so silted up as to admit only small vessels. See *Lilybæum*. Pop. (1911) 65,451.

Marsden (marz'den), William, oriental scholar, born in Dublin in 1754, was sent out early in life to Sumatra, in the East India Co.'s service, and returned to England in 1779. In 1795 he became chief secretary to the admiralty, retiring in 1807. Among his works are: *History of Sumatra, Dictionary of the Malayan Language; Grammar of the Malayan Language; Translation of the Travels of Marco Polo*, with a commentary; and *Numismata Orientalia*. He died in 1836.

Marseillaise Hymn (mär-se-läz'), the war-song of the French Republic. The words, and, as is generally believed, the music, were written in 1792 by Rouget de l'Isle, an officer in garrison at Strasburg, on the occasion of a body of volunteers leaving that city for the war against Austria and Prussia, and the poem was entitled by him *Chant du Guerre de l'Armée du Rhin* ('War-song of the Army of the Rhine'). It was called *Marseillaise* because first sung in Paris by volunteers from Marseilles.

Marseilles, French Marseille (mär-sälz', mär-sä-yē; Latin, *Massilia*), a city and the principal commercial seaport of France, on the Mediterranean, capital of the department of Bouches-du-Rhône. It is situated on the northeastern shore of the Gulf of Lyons, and lies in the form of an amphitheater round a natural harbor of modern size now known as the Old Harbor. From the inner end of the harbor runs inland one of the finest of the city thoroughfares, called the Cannebière next the harbor, while at right angles to this another great thoroughfare or broad avenue runs through the city. Though a handsome city as a whole, Marseilles is not rich

in public edifices. The most deserving of notice are the large new cathedral in the Byzantine style; the church of Nôtre Dame de la Garde, on a hill of same name; the church of St. Victor; the Hôtel de Ville; the Prefecture; the Palais des Arts de Longchamp, with picture gallery and natural history museum; the exchange; public library; and the triumphal arch through which the town is entered on the side of Aix. The harbor is strongly defended by various works. What is called the New Harbor consists of a series of extensive docks along the shore to the west, with a protecting breakwater in front. In recent times Marseilles has made great progress in its extent, street improvements, population and commerce, largely owing to the conquest of Algeria and the opening of the Suez Canal. The most important manufactures are soap, soda and other chemical products; also olive and other oils, sugar, machinery, iron and brass work, candles, glass, earthenware, etc. The trade is chiefly in soap, olive oil, wine, brandy, corn, flour, dried fruits, tobacco, wool, skins, iron, cotton, etc.—Marseilles was founded by a colony of Greeks from Asia Minor about 600 years before Christ, the original name being Massalia. It attained great prosperity as a Greek colonial center, and the Greek language is said to have been spoken here till several centuries after Christ. It was taken by Cæsar in B.C. 49. On the decline of the Roman Empire it became a prey to the Goths, Burgundians and Franks. In 735 it fell into the hands of the Saracens, and in the tenth century it came under the dominion of the counts of Provence, and for some centuries after followed the fortunes of that house. Pop. (1911) 550,619.

Marsh, George Perkins, scholar and diplomatist, born at Woodstock, Vermont, in 1801. He was graduated at Dartmouth College, studied law, and practiced at the bar. In 1842-49 he was a member of Congress, and in 1851 American minister at Constantinople. From 1861 till his death in 1882 he was American minister to Italy. He published a *Grammar of the Old Icelandic Language, The Origin and History of the English Language, The Earth as Modified by Human Action*, etc.

Marsh, Othniel C., naturalist, born at Lockport, New York, in 1831. He devoted himself to the investigation of extinct vertebrate animals. From 1883 he was President of the National Academy of Science. In 1866 he was appointed professor of palæontology in Yale College, and was distinguished for the many species of extinct vertebrate animals described by him, largely from the Rocky Mountains. He wrote *Odontornithes, Dinocerata*, etc., with a large number of scientific papers. He died in 1899.

Marshal (mär'shal), French Maréchal, a word of German origin signifying originally a man appointed to take care of horses. A similar term is the French *connétable* or constable, from L. *comes stabuli* (count or master of the stable). The marshal of the German Empire derived his origin from the Frankish monarchs, and was equivalent to the *comes stabuli* or *connétable*. He had to superintend the ceremonies at the coronation of the emperor, and on other high occasions. There is still a marshal at the head of the households of German sovereigns. In France *maréchal de France* is the highest military honor. In Germany *general-field-marshal* is the highest military honor. In the United States a marshal is an executive officer (resembling the sheriff) connected with the courts.

Marshall, a city, county seat of Saline County, Missouri; 84 miles east of Kansas City, on Chicago & Alton and Missouri Pacific Railways. Here are Missouri Valley College, the Academy Notre Dame de Sion, and the Missouri Colony for Feeble-Minded and Epileptic. There is a large shoe factory and other industrial plants. Pop. 6000.

Marshall, a city of Texas, seat of Harrison County, 40 miles w. of Shreveport, La. Timber and glass sand are plentiful in the vicinity, and there are car-wheel works, basket and crate factory, saw and planing mills, cotton-seed oil mill, ice factory, etc. Here are the Baptist Junior College of Texas and Bishop College and Wiley University (both colored). Pop. 15,000.

Marshall, John, an eminent jurist and statesman, born at Germantown, Virginia, in 1755. He became a captain in the Revolutionary war and took part in several battles, became a lawyer, and in 1788 advocated the adoption of the Federal Constitution in several powerful speeches. He was elected to Congress in 1799. In 1800 he was appointed Secretary of State by President Adams. He had long been at the head of the Virginia bar, and in the branches of international and public law had no superior in the country. On January 31, 1801, he was appointed Chief-Justice of the Supreme Court of the United States, and held this high office for thirty-four years, his decisions being regarded as the standard authority on

constitutional questions. No man has equaled him in developing the fundamental principles of the Constitution. He died in 1835.

Marshall, THOMAS RILEY, an American lawyer and statesman, was born in Manchester, Indiana, March 14, 1854. He was graduated from Wabash College in 1873, and admitted to the bar in 1875. In 1908 he was elected Democratic governor of Indiana. In November, 1912, he was elected vice-president of the United States on the Democratic ticket and was re-elected in 1916.

Marshalltown (mar'shal-toun), a city, capital of Marshall County, Iowa, is situated near the Iowa River, 50 miles N. E. of Des Moines. Large quantities of grain are shipped; there is a large pork-packing establishment, manufactures of furnaces, engines, machinery, glucose, etc. Pop. 13,374.

Marshalsea (mär'shal-sē), formerly one of the London prisons, set apart for the detention of debtors.

Marsh-elder. See *Guelder-rose.*

Marshfield, a city of Wood County, Wisconsin, 165 miles N. W. of Milwaukee. It has manufactures of furniture, stoves, wood veneer, excelsior, bed-springs, etc. Pop. 5783.

Marsh-gas. See *Fire-damp.*

Marshmallow (marsh-mal'lō), *Althæa officinalis*, a common European plant, growing in marshes, especially near the sea, in great abundance. It is employed medicinally as a demulcent, and is the *guimauve* of the French, used in the preparation of demulcent lozenges. It is perennial, and has a white, fleshy, carrot-shaped root, which may be used as food. The hollyhock (*A. rosea*) is another species.

Marshman (marsh'man), JOSHUA, an English missionary, born in Wiltshire, 1768, and sent in 1799 by the Baptist Missionary Society to Serampore, India. He translated a great portion of the Bible into Chinese, published the works of Confucius (1811), a Chinese grammar (1814), and with Carey a *Sanskrit Grammar* (1815) and a *Bengali-English Dictionary* (1825). He died at Serampore in 1837.—His son, JOHN CLARK MARSHMAN (1794–1877), was official Bengali translator, and wrote a *History of India.*

Marsh-marigold (mar'i-gōld; *Caltha palustris*), a plant of the nat. order, *Ranunculaceæ* is a common wild plant found in damp places; in America also known as cowslip. It has kidney-shaped, shining leaves, and large yellow flowers.

Marsh-rosemary (rōz'ma-ri), the North American name for *Limonium Limonium*, a salt-marsh plant of North America and Europe, the root of which is a strong astringent, and sometimes used in medicine.

Marsilius of Padua (mär-sil'i-us) or MARSIGLIO MAINARDINO, an Italian medieval scholar, born at Padua in 1270; died about 1342. He went to Paris about 1311, where in collaboration with John of Jandum, he composed the famous *Defensor pacis* (1324). A violent struggle had just broken out between pope John XXII and Louis of Bavaria, King of Romans, and the authors chose this opportunity to demonstrate by plausible arguments the supremacy of the Empire and its independence of the Holy See. Marsilius accompanied Louis to Rome, and saw him crowned emperor by those who claimed to be the delegates of the people while John XXII was deposed and a mendicant friar raised to the papal seat. Marsilius was later appointed archbishop of Milan.

Marsipobranchii (mar-si-pō-brank'i-i; Gr. *marsipos*, a pouch, and *branchia*, gills), the order

MORPHOLOGY OF MARSIPOBRANCHII.

A, *Myxine glutinosa*, the Hag-fish, showing the sucker-like mouth, and the two ventral openings (*h*) by which the water escapes from the gills. B, The River Lamprey or Lampern (*Petromyzon fluviatilis*), showing the seven branchial apertures on the side of the neck.

of fishes comprising the hag-fishes and sea lampreys, with pouch-like gills. The organization of these fishes is of a very low grade, as indicated chiefly by the persistent notochord without ossified vertebral centra, the absence of any traces of limbs, the absence of a mandible and of ribs, and the structure of the gills.

Marston (marx'tun), JOHN, an English dramatic author, of the reigns of Elizabeth and James I; educated at Brasenose College, Oxford.

He was entered at the Middle Temple, of which society he became lecturer, and died after 1633. He was the author of eight plays, all acted at the Black Friars theater with applause. Six of these were printed in one volume in 1633, and dedicated to the Viscountess Falkland. He assisted Ben Jonson and Chapman in the composition of *Eastward Ho*. He also wrote three books of satires, entitled the *Scourge of Villary* (1599).

Marston, PHILIP BOURKE, an English poet, son of Westland Marston, born at London in 1850. He became blind in his fourth year, and to this the introspective and morbid character of much of his work must be attributed. His poems were collected at various times in the volumes entitled *Song-tide* (1870), *All in All* (1875), and *Wind Voices* (1883). He also wrote critical papers and novelettes. A selection of the stories was published after his death under the title *For a Song's Sake*. He died in 1887.

Marston, WESTLAND, an English poet and dramatist, born at Boston in 1820; died in 1890. He went to London to study law, but devoted himself to literature, his first tragedy, *The Patrician's Daughter*, being produced at Drury Lane in 1842 by Macready, Phelps and Helen Faucit. Of his many subsequent plays (collected in two volumes in 1876) the best known are *Strathmore* (1849), *Ann Blake* (1852), and *Life for Life* (1868). He is also the author of several lyrical compositions, some short stories collected in 1861 under the title of *Family Credit*, and a novel, *A Lady in her own Right*, published in 1860.

Marston Moor, in Yorkshire, about 7 miles west of York, a locality celebrated for the battle between the royal forces under Prince Rupert and the troops of the Parliament under Fairfax and Cromwell (July 2, 1644), in which the latter were victorious.

Marsupialia, sup'i-alz; L. *marsupi-* or MARSUPIALS (mär-um, a pouch), an extensive group of mammalia, differing from all others in their organization, and including genera which correspond to several orders of ordinary mammals. They belong to the aplacental mammals, and their most striking peculiarity is the production of the young in an immature state, a feature which renders necessary the pouch in which the immature young are placed immediately on their birth. In this pouch are the mammæ or teats, and sheltered here the imperfect young ones, attached to the nipple by the mouth, remain till fully developed. The marsupials link the mammals, through the Monotremata (which see), to the birds and reptiles. There are many genera both herbivorous and carnivorous, the great bulk of them being confined to the Australian region. The kangaroo and opossum are familiar examples. The Marsupialia are divided into the following sections:—*Rhizophāga* (root-eaters), including the rodent-like wombat; *Poephāga* (grass-eaters), including the kangaroos, and kangaroo-rats or potoroos, all strictly plant-eaters; the *Carpophāga* (fruit-eaters), of which the typical group is the phalangers, the best known being the Australian opossum; the *Entomophāga* (insect-eaters), in which are the American or true opossum, the bandicoots, and the banded ant-eater; *Sarcophāga* (flesh-eaters), of which the best known are the 'Tasmanian wolf' and 'Tasmanian devil.'

Marsyas (mär'si-as), a personage in Greek mythology, who is said to have challenged Apollo to a trial of skill in flute-playing, and, being beaten, was flayed alive by the god.

Martaban (mär-tä-bän'), a small town in Burmah, at one time seat of the Burmese government, on the right bank and near the mouth of the Salwen River, captured by the British in 1824, and again in 1852.

Martagon (mär'ta-gon), a kind of lily, *Lilium Martagon*, the bulbs of which are eaten by the Cossacks.

Martel-de-fer, an ancient weapon having a kind of cross-head forming at one end a pick, and at the other a hammer, axe-blade, half-moon, or other termination.

Martello-towers (mär-tel'ō), the name (of doubtful origin) given to small circular-shaped forts with very thick walls, chiefly built to defend the seaboard. A number of such towers were built on the British coasts, especially in the south, in the time of Napoleon I. They are in two stages, the basement story containing store-rooms and magazine, the upper serving as a casemate for the defenders; the roof is shell-proof. The armament is a single heavy traversing gun.

Marten (mär'ten), the name of several carnivorous quadrupeds of the genus *Mustela* or *Martes*, family Mustelidæ (weasels). The body of the marten, like that of the weasel, is elongated and slender. The legs are short, the feet being provided with five toes, armed with sharp claws. In habit the martens differ from the weasels in being arboreal, these forms climbing trees with

great case. The common marten (*Martes* (*Mustela*) *foina*), is found in Europe generally, as also is the pine-marten (*M. abietum*). They feed on the smaller wild animals, such as rats, mice, etc., but also attack birds and devour eggs. The pine-marten occurs chiefly in North America and in the northern parts of Asia. It is of smaller size than the common marten, possesses a yellowish mark

Pine-marten (*Mustela Martes* or *Martes abietum*).

on the throat, and has a finer fur largely used for trimmings. It burrows in the ground. The famous sable marten (*M. Zibellina*), which furnishes the valuable sable fur, is nearly allied to the pine-marten. It inhabits Siberia. The American sable is furnished by the *M. leucōpus;* and Pennant's marten (*M. Canadensis*), or the *fisher*, as it is popularly called, is another well-known species.

Martha's Vineyard, the principal island of Dukes county, Massachusetts, 12 miles W. N. W. of Nantucket, 19 miles long, and from 2 to 10 broad. It contains several towns and seaside resorts.

Martial (mär'shal), in full MARCUS VALERIUS MARTIALIS, a Roman writer of epigrams, was born at Bilbilis, in Spain, A.D. 43, and educated at Calagurris (*Calahorra*), the birthplace of his friend Quinctilian. He went to Rome when young, during the reign of Nero, and lived under Galba and the following emperors. Domitian gave him the rank of tribune and the rights of the equestrian order. In 100 A.D. he returned to Spain to his native city, and died there not earlier than 104 A.D. His celebrity is founded on fourteen books of epigrams, which for the most part depict with no less good sense than pungent wit the life of imperial Rome.

Martial Law, the law by which the discipline of an army is maintained, applying only to persons in actual military service, and only to their conduct in such service. The jurisdiction under the law martial is in a distinct tribunal, known as a court-martial appointed by some superior officer. Under special circumstances of insurrection or rebellion, where the ordinary law is insufficient to protect life and property, it is sometimes necessary to administer the law according to the practice of military courts, by an armed force occupying the disturbed district. The district is then said to be under martial law.

Martin (mär'tin), a name applied to several birds of the genus *Hirundo* or swallows. The one best known is the *H. urbica*, or house-martin, a familiar British bird which builds a globular nest under the eaves of houses, or in the upper angles of windows. In habits it resembles the chimney-swallow, but its tail is less markedly forked, while its nest is also different, that of the chimney-swallow being cup-shaped. See *Swallow*.

Martin, HOMER DODGE, American artist, born at Albany, N. Y., in 1836; died in 1897. After a trip to Europe (1876) he fell under the influence of the Barbizon School, and lived in France, 1882–86, gaining a reputation as one of America's great landscape painters. Among his pictures are *Harp of the Winds*, now in the Metropolitan Museum, New York; *Westchester Hills, Adirondack Scenery, Sand Dunes, and A Newport Landscape.*

Martin, LUTHER, American lawyer, born in New Brunswick, N. J., in 1744; died in 1826. He was graduated at the College of New Jersey (Princeton) in 1762, and was admitted to the Maryland bar in 1771. He was active in opposition to Great Britain, and became attorney-general of Maryland in 1778. He was a delegate to the convention to frame the U. S. Constitution (1787), but withdrew because of his opposition to a strong national government. From 1814 to 1816 he was chief justice of the court of oyer and terminer in Baltimore; and was again attorney-general of Maryland in 1818–20.

Martin, ST., ST. MARTIN OF TOURS, was born of heathen parents in Pannonia about the year 316. He served under Constantius and Julian, and went to Gaul. Among other virtuous and benevolent acts he divided his cloak with a poor man whom he met at the gates of Amiens (Ambianum). The legend says that Christ appeared to him in the following night covered with the half of this cloak. Soon after this vision Martin was baptised, in 337. After living many years in retirement he visited his native place, and converted his mother. About

the year 375 he was chosen against his will Bishop of Tours. In order to withdraw himself from the world he built the famous convent of Marmoutiers, and is said to have died about the year 400. He was the first saint to whom the Roman Church offered public adoration. His festival takes place on the 11th of November. See *Martinmas*.

Martin, St., one of the Leeward Islands, West Indies, between the islands of Anguilla and St. Bartholomew, belonging partly to the French and partly to the Dutch; area, 30 square miles. From the salt-water lagoons in the south quantities of salt are obtained. The climate is considered healthy. Nearly all the inhabitants are English. Pop. 7000.

Martin, Sir Theodore, man of letters, born at Edinburgh in 1816, educated there at the High School and university, settled in London in 1846 as solicitor and parliamentary agent. In 1851 he married Miss Helen Faucit, who had played *Iolanthe* in his successful version of Herts's *King René's Daughter*. He was joint-author with Professor Aytoun of the *Bon Gaultier Ballads*, and he published many volumes of translations in verse—the *Poems and Ballads of Goethe* (1858), *Dramas by H. Herts and Oehlenschläger* (1854-57), *The Odes of Horace* (1860), *Poems of Catullus* (1861), etc. He is also the author of the *Life of Professor Aytoun* (1867), and of the *Life of the Prince Consort*, on the completion of which (5 vols. 1874-80), he was knighted and made K.C.B. In the same year he was elected rector of St. Andrew's University.

Martineau (mär'ti-nō), Harriet, an English authoress, of French Huguenot descent, born at Norwich in 1802; died at Ambleside in 1876. Her first work, *Devotional Exercises for the Use of Young Persons*, appeared in 1823. Next came a number of stories, mostly intended to inculcate some useful lesson, such as those having the title of *Illustrations of Political Economy* (1831-34), which were followed by *Illustrations of Taxation* and *Poor Laws and Paupers*. In 1834 Miss Martineau visited the United States, after returning from which she published *Society in America*, and *A Retrospect of Western Travel*. In 1839 and 1840 appeared *Deerbrook* and *The Hour and the Man*, two novels, the first of which especially acquired a wide popularity. In 1848 she issued *Eastern Life, Past and Present*, the result of a visit made by her to the East in 1846. Up to about this time Miss Martineau had been known as a Unitarian, but she now showed a decided leaning towards Positivism, and in 1853 published a condensation of Comte's *Positive Philosophy*. Among her other works of importance may be mentioned her *History of England during the Thirty Years' Peace*. During the last twenty years of her life her writings consist d mainly of pamphlets and contributions to newspapers and periodicals. A remarkably candid autobiography which had been written for many years was published after her death, with some additions by a friend (Mrs. Chapman).

Martineau, James, Unitarian minister and philosophical writer, a younger brother of Harriet Martineau, was born at Norwich in 1805, educated at the Norwich Grammar School, Dr. Lant Carpenter's school at Bristol, and Manchester New College, York. After holding ministerial appointments in Dublin and Liverpool, he became in 1841 professor of mental and moral philosophy in Manchester New College. In 1857 he removed to London, and was minister of Little Portland Street chapel from 1859 to 1872. In 1868 he was appointed principal of Manchester New College (which from 1853 had been in London). He is the author of *The Rationale of Religious Inquiry* (1837), *Endeavors after the Christian Life* (2 vols. 1843-47), *Miscellanies* (1852), *Studies of Christianity* (1858), *A Study of Spinoza* (1882), *Types of Ethical Theory* (1885), etc. He died in 1900.

Martinique (mär-ti-nēk'), one of the French West India Islands, in the Windward group, 30 miles south by west of Dominica and 20 miles north of St. Lucia. It is of irregular form, high and rocky, about 45 miles long and 10 to 15 broad; area, 380 square miles. Its loftiest summit, Mount Pelée, is 4450 feet high. The climate is hot, but not unhealthy. Hurricanes and earthquakes are not unfrequent. About two-fifths of the island are under cultivation, with sugar-cane, manioc, yams, bananas, sweet-potatoes, coffee and cacao. The mountain slopes are in most parts covered with primeval forests. There are several good harbors, the best of which is Port Royal, on the southwestern side of the island. The island was discovered by the Spaniards on St. Martin's Day, 1493, being then peopled by Caribs, and was settled by the French in 1635. It was twice captured by the British, in 1794 and in 1809, being restored to France in 1814. Its chief town, St. Pierre, with about 30,000 inhabitants, was completely destroyed, with all its

people, by a terrible volcanic explosion in 1902. Pop. 203,781.

Martinmas (mär'tin-mas), the feast of St. Martin of Tours, the 11th of November.

Martinsburg, capital of Berkley county, West Virginia, on the Baltimore and Ohio Railroad, 100 miles W. of Baltimore. It produces carriages, flour, furniture, woolens and worsted., etc. Pop. 10,698.

Martin's Ferry, a city of Belmont county, Ohio, on the Ohio River, 2 miles above Wheeling. Coal is abundant in the vicinity, and it has large glassworks, a blast furnace, tin and rolling mills, machine works, foundry, etc. Pop. 9133.

Martius (mart'se-us), KARL FRIEDRICH PHILIPP VON, a German traveler and naturalist, born in 1794; died in 1868. After taking the degree of Doctor of Medicine at Erlangen, he joined Spix in the scientific expedition to Brazil, set on foot by the Austrian and Bavarian governments (1817 to 1820). On his return to Bavaria he was appointed professor of botany and director of the botanic garden at Munich, appointments which he held till 1864, when he retired. He was the author of a large number of botanical works, but is chiefly known through those arising out of his journey to Brazil—*Reise nach Brasilien* (1824-31); *Historia naturalis Palmarum* (1823-45); and *Flora Brasiliensis* (1840-71), the last two of which are among the most remarkable in botanical literature.

Martos (mär'tōs), a town in Spain, Andalusia, in the province of Jaen. It contains a fine thirteenth century church. Martos was taken from the Moors in 1225 by Ferdinand III, who bestowed it on the order of Calatrava. Pop. 17,078.

Martyn (mär'tin), HENRY, missionary, son of a miner, born near Truro, Cornwall, in 1781. He was graduated as senior wrangler at Cambridge in 1797, and in 1805 went out to India as military chaplain. In 1811 he went to Persia, and died in 1812 at Tokat in Asia Minor, while on his way back to Europe. He translated the New Testament into Hindustani and Persian.

Martyr (mär'tèr), PETER (more correctly PIETRO MARTIRE D'ANGHIERA), an Italian historian and geographical writer, born in 1455; died in 1526. In 1487 he entered the service of Ferdinand and Isabella of Spain, who created him counselor of the Indies. Charles V also treated him with favor. His principal works are *De Rebus Oceanicis et Orbe Novo Decades octo*—a history of the discoveries of Columbus and his successors, from their own narratives; *De Insulis nuper Inventis; De Legatione Babylonica*—an account of his embassy to Egypt in 1501, and his *Opus Epistolarium*.

Martyr, PETER (PIETRO VERMIGLI), Protestant divine, born at Florence in 1500; entered the order of the regular canons of St Augustine at Fiesole in 1516, and in 1519 removed to Padua, where he studied Greek and philosophy. After holding important offices in his order he was compelled in 1542 on account of his religious opinions to take refuge in Zürich. Soon after he became professor of divinity at Strasburg, and in 1547 accompanied Bucer and other reformers, on the invitation of Archbishop Cranmer, to England. He was appointed to the theological chair at Oxford in 1549, but on the accession of Queen Mary was commanded to quit the country, and returned to his Strasburg professorship. In 1556 he removed to Zürich to occupy the office of theological professor. He died in 1562. Peter Martyr was the author of many works on divinity, including Biblical commentaries. His *Epistolæ* were published in 1570; and his *Loci Communes Theologici* in 1580-83.

Martyrology (mär-tèr'ol-o-ji), originally a collection of the acts of the martyrs; now more commonly applied to mere registers of names and deaths of those who have suffered martyrdom for the Christian faith.

Martyrs (mär'terz: Greek for 'witnesses'), a name applied by the Christian church to those persons in particular, who in the early ages of Christianity, and during the great persecutions, suffered ignominy and death, rather than renounce their faith. Festivals in honor of the martyrs seem to have been observed as early as the second century. The Christians offered prayers at the tombs of the martyrs, and thanked God for the example which they had given to the world. The rite was concluded with the sacrament of the Lord's supper and the distribution of alms. Eulogies were also delivered, and accounts of the lives and actions of the deceased read.

Maruts (mä'rutz), in Hindu mythology, the gods or genii of the winds.

Marvell (mär'vel), ANDREW, a political and miscellaneous writer, born at Hull in 1620; died at London in 1678. In 1635 he was sent to Trinity College, Cambridge. On the death of

his father in 1640 he made the tour of Europe; afterwards acted as secretary to the English legation at Constantinople; and on his return was appointed assistant to Milton in his office of Latin secretary. In 1660 he was elected to parliament for his native place, which he represented honorably to the end of his life. Besides a small handful of finely musical poems, he composed much humorous and satirical verse, and was the writer of several political pamphlets. Notwithstanding his opposition to the court his wit commended him to Charles II, who made more than one attempt to win him by bribes, but failed to shake the probity and love of liberty which had gained him the name of the 'English Aristides.'

Marvel of Peru. *See Mirabilis.*

Marx (marks), Karl, a German socialist, born in 1818, studied law and philosophy at Berlin. After editing the *Rheinische Zeitung* at Cologne from 1841 till its suppression, he went in 1844 to Paris, where he took part in the publication of the *Deutsch-Französische Jahrbücher*, and a newspaper *Vorwärts*. Being compelled to flee to Brussels, he there in 1848 became head of the central committee of the socialists. In the same year he made an attempt at Cologne to revive the *Rheinische Zeitung*, but removed to London in 1849. In 1864 he established the *International*, but after the disruption in 1872, when he led the extreme party, he removed from London to New York. He died in 1883. His chief work, the Bible of one group of socialists, was *Das Kapital*, published in 1867.

Mary (mā'ri), The Virgin, the mother of Jesus, according to tradition embodied in the apocryphal gospels the daughter of Joachim and Anna (Luke, i, 32). The story of her life so far as it is given in the New Testament begins with her betrothal to Joseph (Luke, i.), and the narrative of the birth of Christ. She is thrice mentioned during Christ's public ministry (John, ii; Matt., xii, 47; John, xix, 25-27), and once after his death (Acts, i, 14). A tradition asserts that she lived and died at Jerusalem under the care of John; another that she died at Ephesus, to which she and John had retired from the siege of Jerusalem. A later tradition asserts that on her grave being opened three days after her burial only the grave-clothes were found in it. The devotion or veneration paid by Roman Catholics and others to the Virgin Mary is condemned by Protestants in general, who stigmatize it as *Mariolatry*. The title of Mary to veneration did not become official in the orthodox Latin Church till the 6th century, when the Christian Church began to celebrate festivals in her honor, of which the Purification, the Annunciation, and the Visitation (the visits of Mary to Elizabeth) are still retained in Protestant countries. The Greeks and Roman Catholics, and the schismatic churches in the East, observe several feasts besides the above in honor of the Virgin; for instance the birth of Mary, and her death and reception into heaven (by the Roman Catholics called the *Assumption*). The festival of the Immaculate Conception is celebrated only by the Roman Catholic Church.

Mary I, Queen of England, daughter of Henry VIII by Catharine of Aragon, was born in 1516. After her mother's death she was declared illegitimate, but was restored to her rights when the succession was finally settled in 1544. She was bred up by her mother in the Roman Catholic faith, on which account she was treated with rigor under Edward VI. She ascended the throne in 1553, after an abortive attempt to set her aside in favor of Lady Jane Grey. One of her first measures was the reinstatement of the Roman Catholic prelates who had been superseded in the late reign. Her marriage to Philip II of Spain, united as it was with a complete restoration of the Catholic worship, produced much discontent. Insurrections broke out under Cave in Devonshire, and Wyat in Kent, which, although suppressed, formed sufficient excuses for the imprisonment of the Princess Elizabeth in the Tower, and the execution of Lady Jane Grey and her husband Lord Guildford Dudley. England was now formally declared to be reconciled to the pope. As victims of heresy and political conspiracy, nearly 300 perished at the stake, including Cranmer, Latimer and Ridley. Under Philip's influence a war began with France, which ended in the loss of Calais in 1558, after it had been in the hands of the English for above 200 years. This disgrace, and the aversion alike of her subjects and of her husband, told acutely upon Mary's already disordered health, and she died in 1558 after a reign of five years.

Mary II, Queen of England, born in 1662, was daughter of James, duke of York, afterwards James II, by his wife, Anne Hyde, daughter of Lord Clarendon. She was married in 1677 to William, prince of Orange; and when the Revolution dethroned her father, Mary was declared joint-possessor of the throne with William, on whom all

the administration devolved. She died in 1694. See *William III.*

Maryborough, a town, Queensland, Australia, 180 miles north of Brisbane, center of a gold, coal, timber and sugar district. Pop. 13,000.

Maryborough, a municipal town, 112 miles by rail N. E. of Melbourne, Australia. Pop. 6000.

Maryland, one of the American colonies and of the United States; bounded N. by Pennsylvania, E. and S. E. by Delaware and the Atlantic, S. by Virginia and Chesapeake Bay, and S. W. by Virginia and West Virginia; area 12,327 sq. miles, the land area being 9941 sq. miles. The part of the state lying to the east of Chesapeake Bay is called the Eastern shore, and the other on the west the Western shore. The Eastern shore has a low, flat and somewhat sandy surface, covered in many places with stagnant water, which makes ague and intermittent fever prevalent. The western shore gradually rises towards the northwest, where it becomes very mountainous, being traversed by five or six ridges of the Appalachian chain, and attains the height of 3000 feet above sea-level. Beyond this the land again sinks, forming the Hagerstown Valley, part of the great Appalachian Valley. In the extreme west are the beautiful elevated valleys named glades. The chief rivers are the Potomac, the Susquehanna and the Patapsco. Almost all the lower part of Maryland is covered with alluvial deposits. In the Hagerstown Valley there is a full development of the Carboniferous system, with its valuable seams of coal and ores of iron. There are three important coal fields in the state. The other minerals are numerous and some of them of value. The most important crops are Indian corn, wheat and oats. Tobacco is very largely grown. The soil of the Eastern shore is well adapted for peaches and market gardening. The fisheries are productive, and there are extensive oyster beds, surpassing those of any other state. The principal manufactures are canned fruits and oysters, cotton and woolen goods, cordage, bricks and articles in iron; the trade, chiefly foreign, is extensive. A large part of the foreign trade consists in the exportation of canned fruits, vegetables and oysters. Annapolis is the seat of government; but Baltimore is the most important city of the State, and the chief seat of commerce. There is an excellent system of free public schools, and among the higher educational institutions may be noted the St. John's College at Annapolis, and the Peabody Institute (founded in 1857), and the Johns Hopkins University (opened in 1876), both at Baltimore. Maryland received its name from Henrietta Maria, queen of Charles I, by whom this district was granted in 1632 to Sir George Calvert, Lord Baltimore, who designed it as a place of refuge for the Catholics of England. It was one of the original thirteen States. During the Civil war opinion was much divided in the State, but it was retained on the Northern side. Pop. 1,295,346.

Maryport (mā'ri-pōrt), a seaport of England, county of Cumberland, 28 miles west of Carlisle, at the mouth of Ellen. The industries include iron founding, brewing, tanning, flour-milling and sail-making. The herring fishery is productive. There are several collieries and iron furnaces. Pop. 11,423.

Mary Stuart, Queen of Scots, was born at Linlithgow Palace in 1542, and was the daughter of James V by his queen, Mary of Lorraine, a princess of the family of Guise. Her father dying when she was a few days old, the regency was, after some dispute, vested in the Earl of Arran, who declined Henry VIII's demand for the hand of Mary for his son Edward. In the summer of 1548 the young queen was sent by her mother to France, where she was educated in a French convent, and in 1558 was married to the dauphin, afterwards Francis II. He died seventeen months after his accession to the crown, in December, 1560, and in August, 1561, the widowed queen returned to Scotland. Mary had, of course, been educated in France as a Roman Catholic, but when she returned to Scotland she found that the influence of the Presbyterians was paramount in her kingdom. Though inclined to have Roman Catholicism again set up in Scotland, after a vain attempt to influence Knox she resigned herself to circumstances, quietly allowed her half-brother, the Protestant Earl of Moray, to assume the position of first minister, surrounded herself with a number of other Protestant advisers, and dismissed the greater part of her train of French courtiers. She even gave these ministers her active support in various measures that had the effect of strengthening the Presbyterian party; but she still continued to have the mass performed in her own private chapel at Holyrood. At first her subjects were quiet, she herself was popular, and her court was one of the most brilliant in Europe. The calamities of Mary began with her second marriage, namely, to her cousin, Lord Darnley, whom she married on July 29, 1565.

Darnley was a Roman Catholic, and immediately after the marriage the Earl of Moray and others of the Protestant lords combined against the new order of things. They were compelled to take refuge in England, and the popularity of Mary began to decline. In addition to this Darnley proved a weak and worthless profligate, and almost entirely alienated the queen by his complicity in the murder of Rizzio (March 9, 1566), though a reconciliation seemed to be effected between them about the time of the birth of their son, afterwards James VI of Scotland and I of England (June 19, 1566). About the close of the same year, however, Darnley withdrew from the court, and in the meantime the Earl of Bothwell had risen high in the queen's favor. When the young prince James was baptized at Stirling Castle, on December 1, 1566, Bothwell did the honors of the occasion, and Darnley, the father of the prince, was not even present. Once more, however, an apparent reconciliation took place between the king and queen. Darnley had fallen ill, and was lying at Glasgow under the care of his father. Mary visited him, and took measures for his removal to Edinburgh, where he was lodged in a house called Kirk-of-Field, close to the city wall. He was there tended by the queen herself; but during the absence of Mary at a masque at Holyrood the house in which Darnley lay was blown up by gunpowder, and he himself was afterwards found dead with marks of violence on his person (February 9, 1567). The circumstances attending this crime were very imperfectly investigated, but popular suspicion unequivocally pointed to Bothwell as the ringleader in the outrage, and the queen herself was suspected, suspicion becoming still stronger when she was carried off by Bothwell, with little show of resistance, to his castle of Dunbar, and married to him on the 15th of May. A number of the nobles now banded together against Bothwell, who succeeded in collecting a force; but on Carberry Hill, where the armies met on the 15th of June, his army melted away. The queen was forced to surrender herself to her insurgent nobles, Bothwell making his escape to Dunbar, then to the Orkney Islands, and finally to Denmark. The confederates first conveyed the queen to Edinburgh, and thence to Loch Leven Castle, where she was placed in the custody of Lady Douglas, mother of the Earl of Moray. A few days after, on the 20th of June, a casket containing eight letters and some poetry, all said to be in the handwriting of the queen, fell into the hands of the confederates. The letters, which have come down to us only in the form of a translation appended to Buchanan's *Detection*, clearly show, if they are genuine, that the writer was herself a party to the murder of Darnley. They were held by the confederates to afford unmistakable evidence of the queen's guilt, and on the 24th of July she was forced to sign a document renouncing the crown of Scotland in favor of her infant son, and appointing the Earl of Moray regent during her son's minority. After remaining nearly a year in captivity Mary succeeded in making her escape from Loch Leven (May 2, 1568), and assisted by the few friends who still remained attached to her, made an effort for the recovery of her power. Defeated by the regent's forces at the battle of Langside (May 13, 1568), she fled to England, and wrote to Elizabeth entreating protection and a personal interview; but this the latter refused to grant until Mary should have cleared herself from the charges laid against her by her subjects. For one reason or another Elizabeth never granted Mary an interview, but kept her in more or less close captivity in England, where her life was passed in a succession of intrigues for accomplishing her deliverance. For more than eighteen years she continued to be the prisoner of Elizabeth, and in that time the place of her imprisonment was frequently changed, her final prison being Fotheringhay Castle, Northamptonshire. She was at last accused of being implicated in a plot by one Babington against Elizabeth's life, and having been tried by a court of Elizabeth's appointing, was on October 25, 1586, condemned to be executed. There was a long delay before Elizabeth signed the warrant, but this was at last done on February 1, 1587. Mary received the news with great serenity, and was beheaded a week later, on February 8, 1587, in the castle of Fotheringhay. Authorities are more agreed as to the attractions, talents and accomplishments of Mary Stuart than as to her character. Contemporary writers who saw her unite in testifying to the beauty of her person, and the fascination of her manners and address. She was witty in conversation, and ready in dispute. In her trial for alleged complicity in Babington's plot she held her ground against the ablest statesmen and lawyers of England. Besides letters and other prose writings, Mary was the author of some short poems of no great merit. The best is one on the death of her first husband, Francis II. The lines beginning 'Adieu, charmant pays de

France,' long ascribed to her, were written by a French journalist of the eighteenth century.

Marysville, a city, capital of Yuba County, California, at the head of navigation on the Yuba River, 52 miles N. of Sacramento. It contains Notre Dame College, and has fruit canneries, woolen mills, etc. Pop. 5430.

Masaccio (mä-sät'chō), properly TOMMASO GUIDI, one of the oldest painters of the Florentine school, said to have been born about 1401. In the church del Carmine, at Florence, are some excellent paintings of his, also at St. Clemente in Rome, but in a bad state. Baldinucci and Vasari place Masaccio among the first painters by whom the harshness and difficulty of the art was diminished, and life and expression given to it. He died in 1428.

Masai-Land (ma-sa'i-land), a region in eastern equatorial Africa, between the Victoria Nyanza and the sea, and so named from the Masai, who are its chief inhabitants. It is generally elevated, Mount Kilimanjaro being the chief mountain mass. It contains Naivasha and other lakes. The Masai are a well-built race, not of the negro type, and support themselves partly by cattle-raising, partly by the plunder of their weaker neighbors. It is partly within British, partly within German East Africa.

Masaniello (mas-in-i-el'ō), properly TOMMASO ANIELLO, a celebrated Neapolitan insurgent, born at Amalfi in 1622. He gained a livelihood in Naples as a fisherman and a dealer in fish and fruit, and his outspokenness with regard to Spanish oppression procured him a large faction among the common people. In 1647 Masaniello refused to pay the tax on a basket of fruit brought by him to the city. He was supported by the people, who broke into open rebellion and carried all before them. The Spanish viceroy was forced to make concessions and redress grievances, whereupon Masaniello laid down his arms. But he still appeared dangerous to the viceroy, who invited him to his house, and probably mingled poison with his wine. In a delirium Masaniello ran through the streets of Naples, shooting his best friends. He was assassinated by some of his companions, but the next day his murderers became victims to the popular rage.

Masaya (mä-sä'yä), a town of Central America, in Nicaragua, 12 miles northwest of Granada, in a very fertile district near the volcano of Masaya (3500 feet high). Pop. 20,000.

Masbate (mäs'bät), a province of the Visayan Islands, Philippines, composed of three main islands, Masbate, Burias and Ticao, and 65 dependent islands. Area, 1732 square miles; pop. 4500.

Mascagni (mäs-kän-yē'), PIETRO, an Italian operatic composer, born in 1863. His works include, *Cavalleria Rusticana*, *L'Amico Fritz*, etc.

Mascalonge (mas'ka-long; *Esox nobilior*), a fine North American fresh-water fish of the pike genus, inhabiting the St. Lawrence basin, but also introduced into other waters.

Mascara (mäs-kä-rä'), a town in Algeria, picturesquely situated on the south slope of Mount Atlas, 48 miles southeast of Oran, surrounded by a wall. It was a stronghold of Abd-el-Kader, and was taken by the French in 1835 and 1841. Pop. 22,034.

Mascarene Islands, (mäs-kä-rēn') the islands of Réunion, Mauritius and Rodriguez, so called from Mascarenhas, a Portuguese navigator, who discovered Réunion in 1545.

Masefield (mäs'fēld), JOHN, an English poet, born in 1874; led a wandering life and early attracted wide attention by his vigorous and forceful poems and ballads. Perhaps the best known of his narrative poems are *The Everlasting Mercy* and *The Widow of Bye Street*.

Masinissa (mas-in-is'a), king of ancient Numidia, at first only of the eastern portion of the country, but later of the whole, having, by the help of the Romans during the second Punic war, defeated Syphax, king of Western Numidia. His acquisition of a number of Carthaginian provinces led to the third Punic war, in the second year of which he died (148 B.C.), aged about a hundred years. His kingdom, at his own desire, was divided among his three sons, of whom Mastanabal, the youngest, was the father of the notorious Jugurtha.

Mask, a covering for the face, often shaped so as to form a rude representation of the human features. They have been in use from the most ancient times. Among the Greeks they were used particularly in the processions and ceremonies attending the worship of Dionysus (Bacchus). As the origin of Grecian tragedy was closely connected with the worship of Dionysus, masks were used in it even in the beginning. The ancient masks usually covered the whole head, and represented, with the features, the head, hair and eyes. They had mostly very large open mouths, and seem, as

have had some effect in strengthening the voice of the speaker, this being required by the immense size of the old theaters. The Roman theater differed little from the Grecian in the use of the mask, which the Italian popular theater, called Commedia dell' Arte, closely resembling the old Roman mime and pantomime, still retains. The mask ordinarily used at masked balls or masquerades is a covering for the head and face made from a light stuff, a common form being the half-mask covering eyes and nose only. See *Masqued Ball.*

Mask, a species of drama. See *Masque.*

Mask, THE IRON. See *Iron Mask.*

Maskelonge. See *Mascalonge.*

Maskelyne (mas'ke-lin), NEVIL, an English mathematician and astronomer, born in 1732; was educated at Westminster and Cambridge, chosen a fellow of the Royal Society, and in 1761 deputed to proceed to St. Helena to observe the transit of Venus. In 1765 he became astronomer royal; and in 1767 commenced the publication of the *Nautical Almanac,* which he edited till his death. In 1774 he was employed in observations on the eclipses of Jupiter's satellites; and the same year went to Scotland to ascertain the gravitative attraction of the mountain Schiehallien. He died in 1811.

Mason (mā'sun), WILLIAM, an English poet, born in 1725. He studied at Cambridge, and in 1748 published *Isis,* a poem, in which he satirized the Jacobitism and high churchism prevalent in the University of Oxford. This piece provoked a reply from Thomas Warton, entitled the *Triumph of Isis.* In 1752 he published his *Elfrida,* a tragedy on the Greek model. Having obtained the living of Aston, Yorkshire, he was appointed one of the royal chaplains. In 1759 appeared his *Caractacus,* a drama. Some years after Mason was made precentor and residentiary canon at York. One of his principal works, the *English Garden,* a poem, appeared between 1772 and 1782. In 1775 he published the poems of his friend Gray, with a memoir. He also translated Du Fresnoy's *Art of Painting* (1783), and wrote a *Life of William Whitehead* (1788), etc. He died in 1797.

Mason City, capital of Cerro Gordo Co., Iowa, on Lime Creek, 82 miles N. by W. of Marshalltown. Here is located the National Memorial University. It has cement, brick and tile works, foundry and machine shops, and other industries. Pop. 11,230.

Mason and Dixon's Line, the line of 39° 43′ 26.3″ north latitude, which separates the States of Maryland and Pennsylvania. From the time of the grant of the latter territory to William Penn by Charles II, there were active disputes between the family of Penn and that of the Lords Baltimore, the possessors of Maryland, as to the boundary between the two territories. Delaware was first deliminated from Maryland by a line running north and south, and the final boundary line was surveyed in 1763, the line of demarcation being named after the astronomers Charles Mason and Jeremiah Dixon, who traced the greater part of it. The charter to Penn fixed the southern boundary of his province at the 40th degree of latitude, and the dispute was as to whether this meant the beginning or the end of the 40th degree. The first would have extended Pennsylvania southward below Baltimore; the second would have given to Maryland the site of Philadelphia. The boundary, as finally fixed, ran nearly midway between these extremes. Milestones were set up along the whole of this boundary line. The line, as finally drawn, has been popularly supposed to have been the dividing line between the free and slave States; but this is an error, as slavery until abolished by the Fourteenth Amendment to the Constitution was still legal in Delaware, which is both north and east of the line. The line extended westward through three degrees of longitude, to the border of Virginia, the present West Virginia, ending at the peculiar tract of land known as 'the pan-handle,' where a part of West Virginia runs up between Pennsylvania and the Ohio River.

Masonry, FREE. See *Freemasonry.*

Mason-spider (*Mygălē* or *Ctenīza cæmentaria*), a spider more commonly known as the 'Trap-door Spider' (which see).

Mason-wasp, a name given to certain hymenopterous insects, especially *Odynērus musarius,* from their ingenuity in excavating their habitation in the sand.

Masoola-boat (ma-sō'la), a large East Indian boat used on the Coromandel coast for conveying passengers and goods between ships and the shore. They stand high out of the water, are difficult to manage, and sail slow; but they sustain shocks that would break up any European boat, the planks of which they are built being

fastened together by cocoanut fibers. They are rowed sometimes with as many as sixteen oars.

Masora, or Massorah (má-sō'ra), a Hebrew word signifying 'tradition,' the name of a collection of notes referring to the Hebrew text of the Old Testament, and written in Chaldee chiefly on the margin of Hebrew MSS. These notes are various in their character, critical, grammatical and explanatory, and include an indication of the vowel-points and accentuation of the Hebrew text according to the Jewish tradition. At what time the accumulation of these notes was commenced cannot be ascertained. According to some Jewish writers they were begun in the time of Ezra. A large part of them were compiled in the Jewish schools of Tiberias subsequent to the third century, and the collection was not completed till the eighth century at the earliest.

Maspero, Gaston, C. C., a French Egyptologist, born in Paris, 1846. He became professor of Egyptian archæology and philosophy at the College of France and published various works on the subject. His monumental work is *History of the Ancient Peoples of the Classic East.* Died June 30, 1916.

Masque (mask), or Mask, a dramatic entertainment much in favor in the courts of princes during the sixteenth and seventeenth centuries, in the latter particularly in England. In its earliest form it is perhaps best described as a masquerade with an arranged program of music, dancing, etc., and a banquet. The first masque of this kind in England, according to *Holinshed's Chronicle,* was performed in 1510, and they were frequently introduced into the plays of Shakespere, and Beaumont and Fletcher. The parts in the masques of the sixteenth and seventeenth centuries were usually represented by the first personages of the kingdom: if at court the king, queen, and princes of the blood often performed in them. Under James I the masque assumed a higher character, more artistic and literary care being expended in its preparation. In this regard Ben Jonson takes an important place, his masques, despite much that is frigid and pedantic, having not a little genuine poetry. Inigo Jones was for a number of years exclusively employed upon the decorations and elaborate machinery of the court masques, and Henry Lawes wrote the music for several of them. Milton's *Comus,* is, from the literary point of view, the most beautiful of the productions which bear the name of masque, though possibly defective in the matter of spectacle and music. The taste for masques decreased in the reign of Charles I, and after the interruption given to the progress of English dramatic art and literature by the Civil war they were not again brought into fashion.

Masqued Ball (maskt bal), an entertainment, generally of a public character, in which the company are masked or otherwise disguised by dominoes. This kind of amusement became popular in Italy about the year 1512, about which time it was introduced into England by Henry VIII.

Mass, in the Roman Catholic Church, the prayers and ceremonies which accompany the consecration of the eucharist. The word is used generally for all that part of the Catholic service in which the eucharist is offered. At present the mass consists of four chief parts:—1. The introduction; 2, the *offertorium,* or sacrifice; 3, the consecration; 4, the communion. These four chief parts, of which the latter three are considered the most essential, are composed of several smaller parts, each having its proper denomination. They consist of prayers, hymns, shorter and longer passages of the Holy Scriptures, and a number of ceremonies, which, as the essential point of the mass is the sacrifice of the Lord, consist partly of symbolical ceremonies commemorative of important circumstances in the Saviour's life, or signs of devotion and homage paid to the presence of the Lord in the host. The order of these ceremonies, and of the whole celebration of the mass, is given in the missal or mass-book. The masses are modified according to many circumstances, *e.g.* according to the saint in honor of whom the mass is celebrated, or the seasons of the year connected with different events in the Saviour's life, or the purpose for which the mass is said, as the *missa pro defunctis* (mass for the dead). *Votive mass* is an extraordinary mass, instead of that of the day, rehearsed on some special occasion. *Low mass* is the ordinary mass performed by the priest, without music. *High mass* is celebrated by the priest, assisted by a deacon and subdeacon or other clergy, and sung by the choristers, accompanied by the organ and other musical instruments. Besides these there are different masses according to the different rites; the *Greek mass,* the *Latin mass,* the *Roman* and *Gregorian mass,* etc.

Mass, in physics, the quantity of matter in any body, or the sum of all the material particles of a body. The *mass* of a body is estimated by its weight, whatever be its figure, or whether its bulk

or magnitude be great or small. See *Dynamics.*

Massa-Carrara (mäs'a-kär-rä'a), formerly a small state of Italy, situated on the western slope of the Apennines, bounded principally by Tuscany and the Duchy of Modena. In 1741 it passed into the hands of the house of Modena, with whom, excepting the period of French occupation (1796-1814), it remained until 1859, when it was united with those portions of the duchies of Parma and Modena lying west of the Apennines, and erected into the province Massa e Carrara. The province is celebrated for the Carrara marble. Area, 685 sq. miles; pop. 195,-631.

Massachusetts (mas-sä-chū'sets), one of the original United States, bounded north by Vermont and New Hampshire; east by the Atlantic; south by the Atlantic, Rhode Island and Connecticut; and west by New York; area, 8266 sq. miles; capital, Boston. The greatest length is 160 miles; width 47 to 90 miles; the coast line, which has a length of about 250 miles, is indented with deep and extensive bays, of which Massachusetts Bay (which includes the large bays of Boston and Cape Cod), Buzzard and Nantucket bays are the most capacious. The indentations in these bays form excellent harbors, the most commodious of which are Newburyport, Boston Harbor and Marblehead. The islands of Nantucket and Martha's Vineyard, with several others, belong to Massachusetts. The west part of the state is traversed by the Green Mountains, whose loftiest peak rises 3500 feet above sea-level. The most considerable rivers are the Connecticut, Housatonic and the Merrimac. The soil is poor and sandy near the coast, where salt marshes frequently occur, these yielding good crops of hay. The S. E. section has many shallow lakes, and abounds in swamps, producing cedar timber and yielding large crops of cranberries. In the middle and western parts the soil is fertile and well cultivated. Among the chief products are potatoes, hay, maple sugar, honey and dairy materials; tobacco yields good returns and cattle are largely kept. The chief grains are oats, rye and barley; corn being raised for home consumption and wheat, buckwheat and barley raised only in small quantities. A considerable portion of the surface of the ground is still covered with forests, consisting of pine, oak, walnut, birch, maple, ash, cedar, cherry and chestnut. Of fruits the apple gives the largest yield. The climate is liable to extremes of heat and cold. Of mineral products granite is largely quarried, and marble, limestone, emery and quartz are abundant. There are many springs throughout the state. Massachusetts is, in regard to the actual amount of its manufactures, the third State in the Union, being excelled in this respect only by New York and Pennsylvania; but in proportion to its area and population it is the first. Massachusetts is pre-eminently a manufacturing state, due in part to its early settlement and in part to its superior water-power advantages. The chief manufactures are boots and shoes, cotton goods, woolen goods, foundry and machine products, printing and publishing, slaughtering and meat packing, paper and wood pulp, finished leather, electrical machinery and supplies. The fisheries are a valuable and important industry. In shipping Massachusetts is superior to any other State of the Union except New York. Boston, the second seaport of the Atlantic coast, affords excellent opportunities for both domestic and foreign commerce. In connection with the railways may be mentioned the Hoosac Tunnel piercing the Hoosac Mountain in the northwest corner of the State, with a length of 5¾ miles. In educational matters Massachusetts has a high reputation, among its leading institutions being Harvard University, the oldest in the Union, Boston University, Amherst College, Clark University, Williams College, etc. Massachusetts is divided into fourteen counties; and besides the capital, Boston, the chief towns are Worcester, Lowell, Cambridge, Fall River, Lawrence and Lynn. It was at first composed of two colonies—Plymouth colony, first settled by Puritan families who landed in Plymouth in 1620; and Massachusetts Bay colony. These two were united in 1692, under the name the state now bears. Pop. 3,832,800.

Massachusetts Bay, a large bay to the east of the central part of Massachusetts, extending from Cape Ann to Plymouth Bay.

Massachusetts Institute of Technology, a school of applied science, established in Boston in 1861, but now at Cambridge in a striking group of buildings on the Charles River, dedicated in June, 1916. Instruction is given in subjects leading to the degrees of bachelor and master of science, and doctor of philosophy and of engineering. The Engineering and Mining Schools of Harvard University are conducted in coöperation with the Institute.

Massage (mas'äsh, Fr. *masser*, to knead), a form of medical

treatment in which the body of the patient, or some particular part of it, is subjected at the hands of an attendant to a variety of processes technically discriminated as stroking, rubbing, kneading, pinching, pressing, squeezing and hacking. The tendency of this treatment is to assist and stimulate the circulation, and to increase the waste-removing action of the lymphatic vessels, and thus to affect the nutrition, not only of the parts acted upon, but of the whole body, and promote the removal of local swellings, inflammatory products, etc. The process, for which half an hour daily is usually sufficient, is performed upon the naked skin by the bare hands of the operator, no oil being used; and the hands ought to be strong and firm, but soft, very considerable exertion being expended in the operation. The attendant (who is termed a *masseur*, if a man; a *masseuse*, if a woman) needs to be carefully trained, and should have a sufficient knowledge of anatomy to be able to separate out with the fingers a single muscle or group of muscles for treatment, and to trace the direction of the larger vessels and nerve-trunks and act upon them directly. The principal movements should be characterized by a certain uniformity and method. Thus, in stroking with a steady pressure the limbs of the patient, the strokes should always be from the extremities towards the heart, not backwards and forwards in a random way; and in kneading the belly with the heel of the hand, the movements are carried round in the direction of the colon. The treatment has been remarkably successful in cases of nervous disorder of a hysterical kind, and in cases of wasting through imperfect nutrition dependent upon disturbances of stomach, bowels, or liver; and it has proved valuable in diabetes, some of the special diseases of women, and certain cases of paralyzed and contracted muscles.

Massagetæ (mas-saj'e-tē), a collective name given by the ancients to the nomadic tribes of Central Asia who dwelt to the east and northeast of the Caspian Sea. Cyrus lost his life in fighting against them.

Massai. See *Masai*.

Massaua. See *Massowa*.

Masséna (mâs-ā-nâ), ANDRÉ, Marshal of France, born in 1758 at Nice. In 1775 he entered the French army, in which he became an inferior officer. After fourteen years' service he left the army and returned to Nice, where he married. During the revolution he entered a battalion of volunteers, was elected chief of his battalion in 1792, and in 1793 made general of brigade. In 1794 he was appointed general of division, and took command of the right wing of the French army in Italy, where, at Rivoli and elsewhere, he highly distinguished himself. In 1799 he defeated the Austrian and Russian forces at Zürich, and in 1800, by his defense of Genoa for three months, gave Bonaparte time to strike successfully at Marengo. In 1804 he was created a marshal of the empire. In 1805 he received the chief command in Italy, where he lost the battle of Caldiero, and after the peace of Pressburg occupied the kingdom of Naples. In 1807 he was given the command of the right wing of the French army in Poland, and soon after received the title of Duke of Rivoli. In 1809 he distinguished himself against the Austrians, and at Esslingen his constancy and firmness saved the French army from total destruction. Napoleon rewarded him with the dignity of Prince of Esslingen. In 1810 he took command of the army in Portugal, and forced Wellington within the lines of Torres Vedras, till want of provisions compelled Masséna to retire. Napoleon recalled him from Spain, and in 1812 left him without a command. In 1814 he was made a peer by Louis XVIII, and though on the return of the emperor he acknowledged his authority, he took no active part in the events of the hundred days. He died in 1817.

Massenet (mâs-nā), JULES, a French composer, born in 1842. He studied at the Paris Conservatoire, of which in 1878 he became a professor. He is the composer of several operas, of which the best known are *Herodias*, *Don César de Bazan*, and *Manon Lescaut*. His *Scènes Pittoresques* are also well known, and there is a long list of works by him, including the choral works *Marie Magdeleine*, *La Vierge*, etc. Died in 1912.

Massey (mas'sē), GERALD, an English poet, born at Tring in 1828, of poor parents, and for some time an errand-boy in London. He subsequently edited the *Spirit of Freedom*, a Radical paper, and in 1854 published his *Ballad of Babe Christabel*, and other poems. The volume attracted the notice of Landor, and the poems issued in succession to it met with no little popularity. For some years Massey wrote poetical criticisms for the *Athenæum*. One of the best of his prose works is the ingenious *Secret Drama of Shakespeare's Sonnets*, first published in 1864-72, and since republished. Other works are *A Tale of Eternity and other Poems* (1869), *Concerning Spirits*

ualism (1872), *A Book of the Beginnings* (1882), and the *Natural Genesis* (1884). For some years he was popular both at home and in the colonies as a lecturer on Spiritualism and various social and socialistic subjects. He died in 1907.

Massico (mas'i-kō; *Mons Massicus*), a mountain in the province of Terra di Lavoro, Naples, Italy, and having on its slopes a town of the same name. The Massic wine has been famous from remote times.

Massicot (mas'i-kot), the yellow protoxide of lead (Pb O), used as a pigment, etc. See *Litharge*.

Massillon (mâs-ē-yôn), JEAN BAPTISTE, a French pulpit orator, born in 1663 at Hyères, in Provence; entered in his eighteenth year the congregation of the Oratory, professed belles-lettres and theology at Montbrison and Vienne; and was called to Paris in 1696 to direct the Seminary of St. Maloire. The applause which he met with in Paris, even at court, was almost without example. Louis XIV gave him special praise, and the deaths of Bossuet and Bourdaloue, in 1704, left him at the head of the French preachers. He pronounced the funeral oration of Louis XIV in 1715, and in 1717 the regent appointed him to the see of Clermont. In the year following he was chosen to preach before Louis XV. He died in 1742.

Massillon (mas'sil-on), a city of Stark Co., Ohio, on the Tuscarawas River and the Ohio Canal, 8 miles W. of Canton. The natural resources are a high grade of domestic coal, sandstone and fire clay. From the stone and clay are manufactured very fine qualities of sand and brick. Other manufactured articles are engines, threshers, saw mills, feed cutters, stoves, furnaces, cast iron pipe, sheet steel, steam hammers, etc. The city is surrounded by very fertile farm lands and agricultural products have a ready market. Pop. 15,000.

Massinger (mas'in-jèr), PHILIP, a distinguished English dramatist, born at Salisbury in 1584. He studied at Oxford, but quitted the university without taking a degree, and repaired to London about 1606. Little is known of his personal history beyond the fact that he was associated with Fletcher, Middleton, Rowley and Dekker in the composition of certain plays. A note of his burial appears in the register of St. Saviour's, Southwark: 'March 20, 1639-1640, buried Philip Massinger, a stranger.' As a dramatist Massinger is more natural in his characters and poetical in his diction than Jonson, and some critics rank him next to Shakespere. In tragedy, however, he is rather eloquent and forcible than pathetic, and he is defective in humor. His best plays are the *Duke of Milan*, *A City Madam*, *A Very Woman*, *The Fatal Dowry*, *A New Way to Pay Old Debts*. The last-mentioned still maintains its place on the stage, chiefly on account of the characters Marrall and Overreach.

Masson (mas'on), DAVID, critical and biographical writer, born at Aberdeen, Scotland, in 1822; was educated at the Marischal College and at Edinburgh University. After engaging in miscellaneous literary work in Edinburgh and London, he was in 1852 appointed to the chair of English language and literature at University College, London. In 1859 he became editor of *Macmillan's Magazine*, and in 1865 accepted the chair of rhetoric and English literature in the University of Edinburgh. His works include his collected contributions to the quarterlies and other magazines (1856, reprinted with additions in 1874); an elaborate and comprehensive study of Milton's life and times (six volumes, 1858-80); *British Novelists and Their Styles* (1859); *Recent British Philosophy* (1865); *Drummond of Hawthornden* (1873); *The Three Devils* (1874); an important edition of Milton's Poems (1877); and a life of De Quincey (1878). He died in 1907.

Massowa, MASSOWAH, or MASSAUA, a seaport on the Red Sea coast of Africa, now belonging to Italy, and capital of the Italian colony of Eritrea. The town stands on a small barren coral island only a few hundred yards from the mainland, and is very hot and unhealthy. It is the natural commercial outlet for the products of the Soudan and northern Abyssinia, and the exports brought by caravans from the interior include rhinoceros horns, gold, ivory, honey, wax, etc. Until 1885 it was an Egyptian possession, but was then taken possession of by Italy. Pop. (exclusive of Italian troops) 7775.

Massys. See *Matsys*.

Mast. See *Ship*.

Master (mas'tèr), in the navy, formerly the name of the officer who had charge of the details of the navigation of the ship under the general orders of the captain. The duties discharged by the master have latterly been consigned to an officer known as *navigating lieutenant*. The rank of master (between that of ensign and lieutenant) still exists in the navy of the United States. In the merchant service, the mas-

ter is the person entrusted with the chief command of the vessel, and usually styled by courtesy captain. He is the confidential servant or agent of the owners, who are bound to answer for a breach of contract committed by him. The master has power to hypothecate or pledge the ship and cargo for necessary repairs executed abroad. He may enforce obedience to his lawful commands by reasonable and moderate chastisement, but has no jurisdiction over a criminal; his business is to deliver him to the proper tribunals. He is compelled to keep a proper log-book, and must produce it, with the ship's papers, on the requisition of the commander of a ship-of-war of his own nation. The master of an American ship must be a citizen of the United States. In Europe generally the qualifications of masters in point of skill and experience must be attested by examination by proper authorities; but in the United States the civil responsibility of the owners for their acts is esteemed sufficient. The master is liable to the owners by whom he is selected and employed.

Master in Chancery, an officer of a chancery court, appointed to assist the chancellor. Causes involving intricate accounts are often referred to a master for hearing. He is often appointed to examine witnesses, to take depositions, to report the facts of a case, to make settlements under deeds, etc.

Master of Arts (M.A. or A.M., *artium magister*), an academical honor conferred by the universities of the United States, Britain, France, Germany, etc., upon students after a course of study and a previous examination in the chief branches of a liberal education, particularly languages, philosophy, mathematics, physics and history. The precise period of the introduction of this title is not known; but even in the twelfth and thirteenth centuries the honor was so highly esteemed in France that the most distinguished men were eager to obtain it. Afterwards, when the universities were multiplied, and many abuses crept in, it lost much of its importance. In the English universities this degree is the highest in the arts faculty. In the German universities the title is merged in that of Doctor of Philosophy (Ph.D.).

Master of the Buckhounds, an officer of the royal household of Britain, in the master of the horse's department. He is entrusted with all matters connected with the royal hunts. He goes out of office on a change of ministry.

Master of the Horse, the third officer in the royal household of Britain, whose duty it is to superintend the royal stables and all horses belonging to the king. He has the privilege of using the royal horses, pages and servants, and rides next to the king on all state occasions. His tenure of office is dependent upon the existence of his political party in power.

Master of the Rolls, an English official, one of the judges of the Chancery Division of the High Court of Justice, the keeper of the rolls of all patents and grants that pass the great seal, and of all records of the Court of Chancery. He ranks next after the Lord Chief-justice of the Queen's Bench, and above the Lord Chief-justice of the Common Pleas.

Master-singers (German, *Meistersinger*), the name of a literary guild or association which flourished in Mainz, Strasburg, Augsburg, Nürnberg and various other German cities, in the fourteenth and fifteenth centuries, in some cases surviving even to recent times. It represented the poetical efflorescence of burgher life as the Minnesingers had represented that of the feudal chivalry. The members of the guild met and criticised each other's productions in accordance with a remarkable series of canons dealing with literary form. Victory in their own competitions carried with it the right to take apprentices in song craft, who at the expiry of their term, and after singing for some time with acceptation, were themselves admitted as full masters. Among the most famous master-singers were Hans Sachs, Henry of Meissen (Frauenlob), Regenbogen, Hadlaub and Muscatblut. The development of artificial canons in the search for novelty ultimately reduced the whole scheme to utter absurdity, the literary productions becoming lifelessly mechanical.

Mastic (mas'tik), a kind of mortar or cement for plastering walls. It is composed of finely ground oolitic limestone mixed with sand and litharge, and is used with a considerable portion of linseed oil; it sets hard in a few days, and is much used in works where great expedition is required.

Mastic, MASTICH, a resin exuding from the mastic tree (*Pistacia Lentiscus*), a native of Southern Europe, North Africa, and Western Asia. The resin, which is principally produced in the Levant, and chiefly in the island of Chios, is obtained by making transverse incisions in the bark, from which it issues in drops. It comes to us in yellow,

brittle, transparent, rounded tears, which soften between the teeth with a bitterish taste and aromatic smell. Mastic consists of two resins, one soluble in dilute alcohol, but both soluble in strong alcohol. It is used as an astringent and an aromatic. Its solution in spirits of wine constitutes a good varnish. Barbary mastic is obtained from the *Pistacia atlantica*, which grows in the north of Africa and the Levant. Mastic is consumed in vast quantities throughout the Turkish Empire as a masticatory for cleansing the teeth and imparting an agreeable odor to the breath. It was formerly in great repute as a medicine throughout Europe. See also *Lentiscus*.

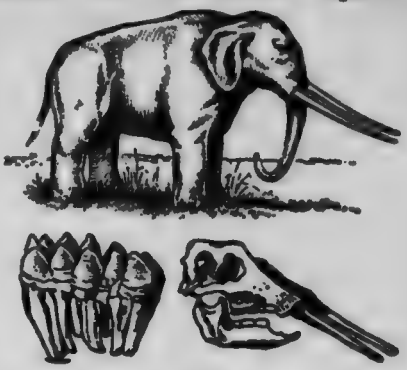
Mastication (mas-ti-kā'shun), the process of division of the food effected in the mouth by the combined action of the jaws and teeth, the tongue, palate and muscles of the cheeks. This process is seen in its typical perfection in the higher Vertebrata only. By it the food, besides being triturated, is mixed with the salivary fluid. Imperfect mastication is a fertile source of indigestion.

Mastiff (mas'tif), a race of large dogs found under various names from Tibet to England. The English mastiff is a noble looking dog with a large head, a broad muzzle, lips thick and pendulous on each side of the mouth, hanging ears and smooth hair, the height at the shoulder usually ranging from 25 to 29 inches. The old English breed was brindled, but the usual color to-day is some shade of buff with dark muzzle and ears. The Tibet mastiff, which is also a fine animal, is common in Tibet and in Bhutan as a house dog.

Mastiff-bat, a name given to an Asiatic and South African bat of the genus *Molossus*, from its head resembling that of the mastiff-dog.

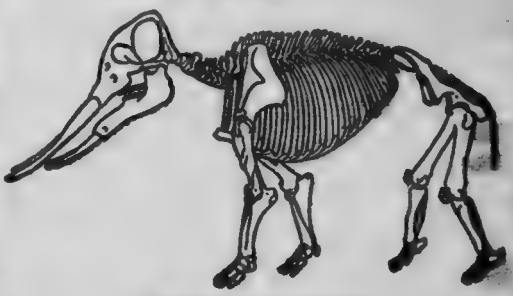
Mastitis (mas-tī'tis), or MAMMITIS, inflammation of the breast.

Mastodon (mas'tu-don), an extinct genus of Proboscidea or Elephants, the fossil remains of which first occur in the Miocene rocks of the Tertiary period, and which persist through the Pliocene and Post-pliocene epochs. In general structure the mastodons bear a close resemblance to the existing species of elephants. Their chief peculiarities consist in the dentition and structure of the teeth, from the curious mammillary processes on which the generic name is derived (Greek *mastos*, breast). The geographical range of the mastodons included North America, Europe and Asia—one species, the *Mastodon longirostris*, having inhabited England, Germany, France and Italy. A specimen, almost entire, of the *Mastodon turicensis*, from the Pliocene deposits of



MASTODON RESTORED.
1, Molar tooth, weighing 17 lbs. 2, Skull of Mastodon of Miocene period.

Piedmont, measured 17 feet from the tusks to the tail; and an American specimen measured 18 feet in length and 11 feet 5 inches in height.



Mastodon *Angustidens*.

Masulipatam (ma-sō-li-pa-tăm'), a town of India, presidency of Madras, 220 miles N. N. E. from the city of that name, on a low flat on the Bay of Bengal, near one of the mouths of the Kistnah. It consists of the pettah or native town, the European quarter, and the fort, at some distance and now neglected. The town is a station of the Church Missionary Society, and there are both Protestant and Roman Catholic churches. The manufactures consist chiefly of cotton goods, plain or printed. Large ships cannot anchor within 5 miles of the shore. In 1864 a storm-wave swept over the town, which is said to have destroyed 30,000 lives, and Masulipatam has never since regained its prosperity. Pop. (1911) 42,123.

Matabele (mat-a-bē'le), a Kaffir race or tribe inhabiting part of South Africa between the Limpopo and

Zambesi, north of the Transvaal, into which they removed from Natal in 1827 under the leadership of their chief Mosselikatse. They are a warlike people. Their territory, known as Matabeleland, is now under British protection. Besides the Matabele there dwell here also numbers of the Makalaka and Mashona tribes, its population being estimated at 175,000. In 1893 the Matabele were severely worsted in pitched battles by the forces of the British South African Company, and the territory is now included in British southern Africa.

Matamoros (mat-a-mō'ros), a city of Mexico, department of Tamaulipas, on the right bank of the Rio Grande del Nôtre, about 10 miles above its mouth in the Gulf of Mexico. Pop. 8347.

Matanzas (ma-tan'zas), a seaport on the northwest coast of Cuba, 52 miles east of Havana, with one of the largest, safest and most convenient harbors in America. It has considerable commerce, exporting sugar, molasses, and coffee, and ranking in importance next to Havana. Pop. 64,385. It is the capital of Matanzas province, 3700 sq. miles in area; pop. 202,444.

Matapan (mä-tä-pän'), CAPE (anciently *Tænārum Promentorium*), the most southern extremity of the Morea, Greece, and of the European continent. It terminates in a high, steep, pyramidal point, at the base of which is a volcanic cavern. Upon its summit are the ruins of a temple, probably of Poseidon.

Mataró (mä-tä-rō'), a town of Spain, in Catalonia, on the Mediterranean, 19 miles northeast of Barcelona. It has manufactures of linen, cotton and woolen goods, soap, etc.; and a considerable trade. Pop. 19,704.

Match (mach). In the most common sense of the term, matches are splints or small slips of wood, one end of which is dipped into a composition that ignites by friction or other means. One of the first forms of this article was the brimstone match, which was a thin strip of resinous or dry pine wood with pointed ends dipped in sulphur, which were lighted with tinder ignited by a flint and steel. The lucifer match was introduced in 1827, the inflammable substance being a mixture of chlorate of potash and sulphide of antimony, applied to the match, which had been previously dipped into melted sulphur. The matches were ignited by being drawn smartly through a piece of folded sandpaper. This was succeeded after a few years by the Congreve match, in which phosphorus was substituted for the sulphide of antimony. Many improvements have since been made both in the composition of the igniting materials and in the processes of manufacture. Sulphur, owing to its offensive smell, is now commonly discarded in favor of paraffin. The igniting composition is essentially an emulsion of phosphorus in a solution of gum or glue, combined with a quantity of chlorate of potash, red lead, or nitrate of lead, to increase the combustibility, and some coloring matter as cinnabar, smalt, etc. The use of common phosphorus has led to many accidental deaths and even to willful poisoning. The operatives, also, who are exposed to the phosphoric fumes during the process of manufacture, are subject to an insidious disease (necrosis) which frequently proves fatal. Fortunately all risks whatever may be avoided by the use of amorphous phosphorus which is an efficient substitute, and entirely innocuous.—*Safety-matches* were invented in Sweden in 1855, and are now extensively used. In the safety-match the composition is divided between the match and the friction paper attached to the box, so that the match can be lighted in ordinary circumstances only by being rubbed on the prepared paper. The compound put on the match consists of chlorate and bichromate of potash, red-lead, and sulphide of antimony, while the friction paper is coated with a mixture of amorphous phosphorus and sulphide of antimony.—*Vestas* are a kind of matches made of a wick of fine cotton threads coated with stearine and paraffin, smoothed and rounded by being drawn through a metal plate pierced with circular holes of the desired size; the wick is then cut into vesta lengths, which are tipped with the ordinary igniting composition.—*Fusees* are made of a thick spongy paper soaked in a solution of niter and bichromate of potash, and tipped with the usual ingredients.—*Vesuvians* are round matches of wood having a large head at each end made of a mixture of charcoal, niter, etc., and tipped with the ordinary igniting composition.

Matchlock (mach'lok), an old form of musket fired by means of a match. They were invented in the first half of the fifteenth century, and were succeeded by the arquebus. See *Musquet*.

Mate (māt), an officer in a merchant-ship, or ship-of-war, whose duty is to assist the master or commander, and to take, in his absence, the command. There is sometimes only one, and sometimes two, three, or four mates in a mer-

chantman, according to her size, denominated *first*, *second*, *third*, etc., mates. The law of the United States recognises only two descriptions of persons in a merchantman—the master and mariners, the mates being included in the latter, and the captain being responsible for their proceedings. In the British navy the term is limited to the assistants of certain warrant officers, as boatswain's mate, gunner's mate, etc.

Maté (mä'tä), the plant that yields Paraguay tea, the *Ilex Paraguayensis*, a kind of holly, nat. order Aquifoliaceæ. It has smooth, ovate-lanceolate, unequally serrated leaves, much-branched racemes of flowers, the subdivisions of which are somewhat unbellate. In Brazil and other parts of South America the leaves are extensively used as a substitute for tea, the name *Maté* having been transferred to the plant from the gourd or calabash in which the leaves are infused. Boiling water is poured upon the powdered leaves, then a lump of burned sugar and sometimes a few drops of lemon juice are added. Usually the infusion is sucked through a tube, sometimes of silver, having a perforated bulb to act as a strainer at the lower end. It contains theine, and acts as a slight aperient and diuretic.

Matera (mä-tä'rä), a town of South Italy, province of Potenza. It is the residence of an archbishop, and has a cathedral and three convents. Pop. 17,801.

Materialism (mä-tē'ri-al-izm), in philosophy, that system which denies the existence of a spiritual or immaterial principle in man, called the mind or soul, distinct from matter; or in a more extended sense, the doctrine that is founded on the hypothesis that all existence (including, of course, the conscious subject) may be resolved into a modification of matter.

Materia Medica (mä-tē'ri-a med'i-ka), the collective name given to the materials with which physicians attempt to cure or alleviate the numerous diseases of the human body, and which comprehend a great variety of substances taken from the mineral, animal and vegetable kingdoms—such as mercury, antimony, arsenic, and zinc, from among the metallic bodies; sulphur, lime, soda, niter, magnesia, borax and several salts, from among the other minerals; and some 200 substances belonging to the animal and vegetable kingdoms.

Mathematics (math-e-mat'iks) is the science in which known relations between magnitudes are subjected to certain processes which enable other relations to be deduced. Mathematical principles which are deduced from axioms with the help of certain definitions belong to *pure* mathematics, and those which have been deduced with the help of pure mathematics from certain simple physical laws, belong to *mixed* mathematics. Arithmetic, geometry, algebra, plane and spherical trigonometry, analytical or coördinate geometry, the differential and integral calculus, quaternions, the calculus of finite differences, etc., are departments of pure mathematics; the dynamics of rigid bodies and the application of its principles in astronomy and in investigating the actions of forces on ordinary matter, acoustics, the undulatory theory of light, optics, thermodynamics, electricity and magnetism, etc., are departments of mixed mathematics. See *Algebra*, *Arithmetic*, *Dynamics*, *Geometry*, etc.

Mather (math'ér), COTTON, colonial author, the eldest son of Increase Mather, was born at Boston in 1663. He was graduated at Harvard College in 1678; and in 1684 was ordained minister in Boston, as colleague of his father. He strove to maintain the ascendency which had formerly belonged to the New England clergy in civil affairs, but which was then on the decline. In 1685 he published his *Memorable Providences relating to Witchcraft and Possessions*, which was used as an authority in the persecution and condemnation of nineteen victims burned for witchcraft at Salem in 1692. He died in 1728, with the reputation of having been the greatest scholar and author that America had then produced, his publications, some of huge dimensions, amounting to 382. Credulity, pedantry, quaintness, eccentricity, are blended in most of his works with great erudition. His largest and most celebrated work is his *Magnalia Christi Americana*, or the *Ecclesiastical History of New England* from 1625 to 1698. His life was written by his son and successor, Samuel Mather, also a learned divine and author.

Mather, INCREASE, one of the early presidents of Harvard College, was born at Dorchester, Massachusetts, in 1639; was graduated at Harvard in 1656; was ordained a minister in 1661; president of Harvard College from 1685 to 1701. When King Charles II signified his wish that the charter of Massachusetts should be resigned into his hands, in 1682, Dr. Mather contended against a compliance. In 1689 he was deputed to England, as agent of the province, to procure redress for grievances

He held conferences with King James II, and with William and Mary, and in 1692 returned to Boston with a new charter from the crown, settling the government of the province. He died at Boston in 1723. His publications were 92 in number, of which his essay for the recording of *Illustrious Providences* (1684) is one of the chief. His book to prove that the devil might appear in the shape of an innocent man, enabled many convicted of witchcraft to escape death.

Mathew (math'ū), THEOBALD, popularly known as *Father Mathew*, Irish apostle of temperance, was born in 1790, studied at Maynooth, and was ordained a priest in 1814. Shortly afterwards he was appointed to a missionary charge at Cork, and established a society, on the model of those of St. Vincent de Paul, for visiting the sick and distressed. A more extended undertaking was the celebrated temperance crusade, which was so successful that in a few months he had 150,000 converts in county Cork alone. A similar success attended his work in many Irish and English towns, and in recognition of this a civil list pension of £300 was bestowed on him. He died in 1856.

Matisse, HENRI, French artist and sculptor, was born at Cateau in 1869 and studied at the Ecole des Beaux Arts, Paris. He joined the school of Impressionism (*q. v.*) and quickly made himself leader of the post-impressionists, startling the world with a number of grotesque paintings that were designed to stimulate the imagination of the beholder rather than present a photographic reproduction of objects. Among his paintings are: 'The Woman with the Green Eyes,' 'Gold Fish,' 'Nude Model.'

Matsukata (mät'sö-kä'tä), MASAYOSKI, MARQUIS, Japanese statesman, born 1835. He aided in the overthrow of Shogunati, was minister of finance in 1881, premier of Japan 1891-92 and 1896-97, minister of finance in 1898, and privy councilor 1903.

Matsumoto, a town of Honshu, Japan, 130 miles N.W. of Tokyo, manufactures silks, baskets, and preserved fruits. Pop. 35,000.

Matsushima, a pine-clad archipelago (over 800 islets) in Sendai Bay, E. coast of Honshu, is considered one of the three natural wonders of Japan.

Matsuyama, a town in the W. part of Shikoku, Japan, 5 miles by railroad from its port, Mitsu, has a large feudal castle. Pop. 44,000.

Matsuye, a town in an inlet of the Japan Sea, 149 miles W. by N. of Kyoto, has large manufactures of paper. Pop. 36,000.

Mathura. See *Muttra.*

Matlock (mat'lok), a town of England, in Derbyshire, on the Derwent, 17 miles northwest of Derby, with lead mines which employ a number of the inhabitants. Pop. (1911) 6746.—The village of Matlock-Bath, about a mile and a half distant, is a much-frequented watering-place.

Matricaria (ma-tri-kä'ri-a), a genus of plants of the nat. order Compositæ. See *Chamomile.*

Matrix (ma'triks), in mining and geology, the rock or main substance in which any accidental crystal mineral, or fossil is embedded

Matriarchate (mä-tri-är'kät). Any social group which is ruled over by a woman or women. It is doubtful, however, if such a custom anywhere exists; since it appears that it is not the mother that rules over her children, but her nearest male relative.

Matsys (mat'sis), METSYS, or MASSYS, QUENTIN, a Flemish painter who was originally a blacksmith, born at Louvain in 1466. It is said he quitted the forge for the pencil in consequence of having become enamored of the daughter of a painter, whose hand was to be obtained only by a master of the same profession. He quitted his native city in 1491 and went to Antwerp, when he was made a master of the famous guild of painters of that city. He chiefly painted portraits and half-figures in common life, but sometimes undertook great works, of which a *Descent from the Cross*, in the cathedral of Antwerp, is a favorable specimen, also his picture of the *Two Misers*. He died in 1529.

Matteawan (mat-tē-a-won'), a village of Dutchess county, New York, on Fishkill Creek, near the Hudson River and 3 miles E. of Newburgh. It has abundant water power and manufactures of hats, silk, machinery, air-brakes, etc. Here is the State Hospital for the Criminal Insane. Pop. 6727.

Matter (mat'ér), that which occupies space, and through which force is manifested. It is also that which makes itself known to us by our bodily senses, though there is believed to exist one kind of matter at least which is too subtle to be perceived by the senses, namely, the intermolecular and interstellar ether, the light-conveying element. Roughly speaking, matter exists in one of three states, solid, liquid, or gaseous, but these are not marked off by any distinct

line. It is believed to consist of minute particles termed atoms, which collect into small aggregates known as molecules, these being the basic elements of the chemical bodies and of all material masses. Matter is commonly regarded as the antithesis of mind.

Matterhorn. See *Cervin.*

Matthew (math'ū), St., evangelist and apostle, son of Alpheus; previous to his call a publican or officer of the Roman customs, and, according to tradition, a native of Nazareth. After the ascension of Christ we find him at Jerusalem with the other apostles, but this is the last notice of him in Scripture. Tradition represents him as preaching fifteen years in Jerusalem, then visiting the Ethiopians, Macedonians, Persians, Syrians, etc., and finally suffering martyrdom in Persia. His gospel has been supposed by some critics to have been originally written in Hebrew, or rather Aramaic, but it is only found in Greek. The chief aim of this Gospel is evidently to prove the Messianic character of Jesus. See *Gospel.*

Matthew of Westminster, an old English chronicler, a Benedictine monk of the Abbey of Westminster, who lived in the fourteenth century. His chronicle, extending from the creation to 1307, was entitled by him *Flores Historiarum* ('Flowers of Histories'), whence his name of *Florilegus.* The work is very freely transcribed from Matthew Paris.

Matthias Corvinus (ma-thī'as cor'vē-nus), King of Hungary, second son of John Hunniades. The enemies of his father kept him imprisoned in Bohemia, but in 1458, at the age of sixteen years, he was called to the throne of Hungary. He maintained his position against Frederick III, repelled the invading Turks, and between 1468 and 1478, conquered Silesia, Moravia and Lusatia; he was also victorious over the Poles, and took the greater part of Austria, including Vienna, from Frederick, and held all his extensive conquests till his death. He encouraged science and scholarship, and collected a great library (afterwards destroyed by the Turks) at Buda. He died in 1490.

Matto-Grosso (mät'to-grōs'so; Great Forest), the most western and second largest province of Brazil, bordering on Paraguay and Bolivia; area, 532,445 square miles. The dense forests which cover a great part of the surface abound with inexhaustible supplies of the finest timber, and yield valuable gums, balsams and medicinal plants. Gold, diamonds and other gems are obtained. Little of the soil is as yet under cultivation. Pop. (exclusive of Indians) 118,[illegible]25.—The city of Matto-Grosso, formerly the capital of this province and of much importance in connection with the gold diggings, has dwindled in population from 20,000 to 1000.

Mattoon (mat-tōn'), a city of Coles county, Illinois, 12 miles s. e. of Peoria, on the Illinois Central and other railroads. It has large grain elevators, railroad repair shops and foundries, machine shops, broom factories, flour mills, wagon and carriage works, tile factories, etc. It is central to the great broomcorn belt of central Illinois. Pop. 11,456.

Mauch Chunk (mak' chunk'), a borough of Pennsylvania, capital of Carbon county, on the w. bank of Lehigh River, 89 miles n. w. of Philadelphia. It is picturesquely situated in a narrow valley or ravine between steep hills, which contain an abundance of anthracite coal. A railway called the Switchback ascends the hills and affords fine views of the scenery, attracting many visitors during the summer. Pop. 4029.

Maude, Sir Frederick Stanley, British general, and captor of Bagdad in 1917 during the European war. Born in 1864; died 1917.

Maulmain. See *Moulmein.*

Mauna Loa (mou'nä lō'ä), a celebrated volcano near the center of Hawaii; height 13,650 feet; distinguished by the size of its crater, 12,400 feet diameter.—Mauna Kea, an extinct volcano of Hawaii, is the highest peak in the Pacific Ocean, rising 13,805.

Maupassant (mō'pä-sän), Guy de, French author, born at Miromesnil in Normandy, 1850; died 1893. He was initiated by Gustave Flaubert into the craft of letters, and attached himself to the younger branch of the naturalistic school. He produced a play, *Histoire du Vieux Temps,* and a striking volume of lyrics published under the title *Des Vers* (1880); but he won his real reputation as a fiction writer, with *La Maison Tellier* (1881), *Les Sœurs Rondoli* (1884), *Contes du Jour* (1885), *Contes et Nouvelles* (1885), *Monsieur Parent* (1885), *Bel-Ami* (1885), *La petite Roque* (1886), *Pierre et Jean* (1888), *Fort comme la Mort* (1889), and *Notre Coeur* (1890).

Maupertuis (mō-per-twē), Pierre Louis Moreau de, a French mathematician and philosopher born at St. Malo in 1698. After four

years' service in the army, he was in 1728 received into the Academy of Sciences. He then visited England and Switzerland, and became a pupil of Newton. In 1736 he conducted a scientific expedition to Lapland for the purpose of measuring an arc of the meridian. In 1740 he accepted an invitation from the King of Prussia to settle at Berlin, where, in 1746, he was declared president of the Academy of Sciences. He died at Basel in 1759.

Maura, SANTA. See *Leucadia.*

Maurepas (mōr-pä), JEAN FRÉDÉRIC PHÉLIPPEAUX, COUNT DE, a French statesman, born in 1701. At the age of twenty-three years he became minister (by inheritance) of the French marine. An epigram on Madame de Pompadour led to his banishment from the court in 1749, but Louis XVI recalled him in 1774, and placed him at the head of his ministry, and he retained the confidence of the king till his death, in 1781. The restoration of the parliaments was the principal measure of his later ministry.

Maurice, OF SAXONY, COUNT. See *Saxe.*

Maurice (mą'ris), JOHN FREDERICK DENISON, an Anglican divine and prominent leader of the Broad Church party, son of a Unitarian minister, was born in 1805, at Normanston, Suffolk. In 1823 he entered Trinity College, Cambridge, where he declined a fellowship on the ground that he could not sign the Thirty-nine Articles. In 1828 he settled in London, and applied himself to literature, his first work of any extent being *Eustace Conyers,* a novel (1834). He also contributed, along with John Sterling, to the *Athenæum,* then recently started. A change in his religious sentiments, however, induced him to become a clergyman of the Church of England (1835), and in 1836 he was appointed chaplain to Guy's Hospital, a post which he kept for ten years. In 1840 he became professor of modern history and English literature in King's College, London, and in 1846 professor of ecclesiastical history, but in 1853 the publication by him of an essay on future punishment, necessitated his resignation of both chairs. In 1854 he founded the first workingman's college in London, of which he became principal. In 1860 he was appointed perpetual curate of St. Peter's, Vere Street, Cavendish Square, and in 1866 professor of moral philosophy at Cambridge, a position which he held until his death in 1872. Besides the books above mentioned, he published several volumes of sermons, and treatises on various subjects.

Maurice of Nassau, Prince of Orange, stadtholder of the Netherlands, the youngest son of William the Silent, was born in 1567. He was elected stadtholder of the provinces of Zeeland and Holland on the assassination of his father in 1585, and subsequently of Utrecht, Overyssel and Gelderland; and as commander of the army of the Netherlands he carried on war against the Spaniards with extraordinary success, driving them entirely out of the United Provinces. Previous to the truce of twelve years, concluded in 1609, when Spain was compelled to acknowledge the United Provinces as a free republic, about forty towns and several fortresses had fallen into his hands. He had defeated the Spaniards in three pitched battles, besides the naval victories which were gained by the vice-admirals of the republic on the coasts of Spain and Flanders. In 1621 the war with Spain was renewed, but the superior force under Spinola compelled Maurice to act upon the defensive only. He died at The Hague in 1625, and was succeeded by his brother Frederick Henry.

Mauricius (mą-rish'i-us), FLAVIUS TIBERIUS, one of the greatest Byzantine emperors, was born about 539 A.D. He distinguished himself in war against the Persians, obtaining, by his complete victory over them in 581, the honor of a triumph at Constantinople. On the death of the Emperor Tiberius, whose daughter he had married, he ascended the throne (582). The war with the Persians continued with varying success, but was brought to a close in 591 by the appeal of the Persian king, Chosroes, to the Byzantines for aid against a rebel general. A defeat of the Byzantines by the Avars, and the massacre of the Byzantine prisoners, whom Mauricius declined to ransom, led to a revolt of his troops on the Danube. They marched on Constantinople under Phocas, who was proclaimed emperor (602), and Mauricius was seized and executed in 603.

Mauritania, or MAURETANIA (mą-ri-tan'i-a), the ancient name of the northwestern portion of Africa, corresponding in its area to the present Morocco and the western part of Algeria. The ancient boundary of Mauritania on the south was the Atlas. In A.D. 40 it became a Roman province. From 429 to 534 A.D. it was held by the Vandals, and in 650 A.D. it was conquered by the Arabs.

Mauritia (mą-rish'i-a), c. BURITI PALM, (*Mauritia vinifera*), called also the Brazilian wine palm, one of the tallest of the palms, rising to a height of 100-150 feet with a diameter of only 2 feet, and bearing an imposing crown of immense fan-shaped leaves with long foot-stalks. It grows in marshy spots. From the juice of the stem and of the fruit a sweet vinous liquor is prepared. The fruit is of the size of a hen's egg. To the same genus belongs the fan-palm of the Orinoco (*M. flexuosa*), which furnishes the Guarani Indians of the Orinoco region with all the necessaries of life.

Mauritius (mą-rish'i-us), or ISLE OF FRANCE, an island in the Indian Ocean, a colony of Great Britain, 400 miles east from the island of Madagascar. It is of an oval form, about 40 miles long from northeast to southwest, and 25 miles in breadth, and is surrounded by coral reefs. It is composed chiefly of rugged and irregular mountains, the highest, the Montagne de la Rivière Noire, 2700 feet, and the isolated rock Peter Botte, 2600 feet. Between the mountains, however, and along the coast, there are large and fertile plains and valleys, having a rich soil of black vegetable mold or stiff clay. The climate is pleasant during the cool season, but oppressively hot in summer, and the island is occasionally visited by severe epidemics. In its vegetation Mauritius resembles the Cape in the number of succulent plants, cactuses, spurges, and aloes. The principal objects of cultivation are sugar, rice, maize, cotton, coffee, manioc and vegetables. The exports include sugar (much the largest), rum, vanilla, aloe fiber, cocoanut oil. The imports consist of rice, wheat, cattle, cotton goods, haberdashery, hardware, etc. The government is vested in a lieutenant-governor and legislative council. The island has two railways crossing it, in all 87 miles. Mauritius was discovered in 1505 by the Portuguese. The Dutch took possession of it in 1598, and named it after Prince Maurice. After occupation by the French it was captured by Britain in 1810. Principal towns, Port Louis and Mahébourg. Pop. 371,023, two-thirds of whom were originally coolies or their descendants imported to work the sugar estates. French is the language chiefly spoken.

Maury (mą'ri), MATTHEW FONTAINE, naval officer and hydrographer, was born in Virginia, in 1806, and entered the United States navy in 1825. In 1839 he was lamed by an accident, and quitted active service afloat for scientific work at the Washington Observatory. He wrote valuable papers on the Gulf Stream, ocean currents, great circle sailing, etc., and his *Physical Geography of the Sea*, published in 1856, gave him a wide reputation. In 1861 he resigned his appointment at the Washington Observatory and entered the Confederate service, in which he obtained the rank of commodore. He died in 1873.

Mauser Rifle (mą'sér), a breech-loading rifle named after its inventor. It is 6 lbs lighter than the Springfield and has a smaller bore. See *Rifle*.

Mausoleum (mą-sō'li-um; Greek, *mausoleion*), a sepulchral monument, so named from Mausōlus, a king of Caria, to whom his wife Artemisia erected a monument which became so famous as to be esteemed the seventh wonder of the world, and to give a generic name to all superb sepulchers. From Pliny we learn that its height was 140 feet. In modern times the term is applied generally to a sepulchral edifice erected for the reception of a monument, or to contain tombs.

Mauvaises Terres (mō-vāz tär; 'bad lands'), the name given to desolate tracts of land in various parts of the North-central United States; more especially to a barren region in Dakota along the White River, an affluent of the Missouri. Here the elevated clayey ground has been eroded by the rains until it presents many curious effects, resembling those of ruined architecture.

Mauve (mąv), a beautiful purple dye obtained from aniline, used for dyeing silks, etc. In silk and wool the colors are permanent without the use of mordants.

Maverick (mav'er-ik), the name given in the cattle ranges of the Western United States to unbranded animals, which the finder often brands for himself or his employer:—hence, something dishonestly appropriated. On these ranges the cattle of different owners herd together and must be branded to prove ownership. If a calf strays away from its mother before being branded, it may be illegally branded, and thus become a maverick. The name is also applied to the unbranded animals driven in at the general round-up and equitably divided among the owners. The word came from Samuel Maverick, a Texan cattleman, who distinguished his animals by leaving them unbranded, and when they became mixed with other herds claimed all unbranded animals as 'mavericks.'

Mavis. See *Thrush.*

Mavrocordato (m a v-ro-kor-da'to), ALEXANDER, PRINCE, a Greek politician and diplomatist, born at Constantinople in 1791; died in 1865. He took part in the Greek movement for freedom (1821); prepared the declaration of independence; became president of the Executive Council; and successfully defended Missolonghi (1822). When Otho was placed on the Greek throne by the European powers Mavrocordato became his financial minister, and he was afterwards ambassador to Munich, London and Berlin. During the insurrection of 1843-44 he was president of the Constitutional Assembly, and at the outbreak of the Crimean war he became head of the Greek government.

Maxentius (maks-en'shi-us), M. AURELIUS VALERIUS, a Roman emperor, 306-312 A.D., son of Maximianus, and son-in-law of Galerius, whom he deposed. He reigned along with his father for a short time; was defeated by Constantine in 312, and in the retreat was drowned in the Tiber.

Maxilla (maks'il-a; Latin, *maxilla*, a jaw), the term applied in comparative anatomy to the upper jawbones of Vertebrates, in contradistinction to the mandible or lower jaw: and in Invertebrata to the second or lesser pair or pairs of jaws. Thus in insects, spiders, crustaceans, etc., the maxillæ form definite and important organs in the trituration and division of food.

Maxim (maks'im), HIRAM STEVENS, inventor, born at Sangerville, Maine, in 1840. He worked as coach builder and engineer and took out patents for various inventions, chief among them being the Maxim machine gun, in which the force of the recoil is used for reloading. He also invented cordite, a smokeless powder, and was one of the first to experiment with flying machines. He lived in England after 1888. Died Nov. 24, 1916.

Maximianus (m a k s - i m - i - ā'nus), MARCUS AURELIUS VALERIUS HERCULIUS, a Roman emperor, who became colleague of Diocletian in the empire in 286 A.D. He endeavored to murder his rival Constantine, to whom he had given his daughter Faustina in marriage, and being frustrated by the fidelity of the latter, strangled himself 310. He was the father and contemporary of Maxentius.

Maximilian I (m a k s - i - m il'yan), Emperor of Germany, son of the Emperor Frederick III and of Eleonora of Portugal, was born in 1459; in 1486 was elected king of the Romans, and emperor in 1493. He first became an independent prince by his marriage with Mary of Burgundy, the daughter of Charles the Bold, who was killed in 1477. This match involved him in a war with Louis XI, king of France, in which he was successful, though he was defeated at a later period by the Milanese. He died in 1519, and was succeeded by his grandson, Charles V. See *Germany.*

Maximilian II, Emperor of Germany, born in 1527; died in 1576. He succeeded his father, Ferdinand I, in 1564; was tolerant of the Reformation, but did not join the Protestant church.

Maximilian, Emperor of Mexico, known in his earlier life as FERDINAND MAXIMILIAN JOSEPH, Archduke of Austria, born at Vienna in 1832, was the younger brother of Francis

Maximilian, Emperor of Mexico

Joseph I of Austria. In 1863 he was induced by the Emperor Napoleon III, and also by a deputation of Mexican notables, to accept the throne of Mexico. With this intention he entered Mexico in June, 1864. Maximilian was at first extremely popular; yet he failed to conciliate either the church party or the republicans, and the latter, under Juarez, rose in revolt. Having become involved in financial and political difficulties, Maximilian, with the approval of Napoleon, resolved to abdicate (1866), and he had proceeded to Orizaba when he was induced to return by the Conservative party in the state. The fighting which followed culminated in the capture and execution of the emperor and two of his chief generals, June 19, 1867.

Maximilian Joseph, King of Bavaria, born in 1756; died in 1825. He married his daughter to Eugene Beauharnais, son of Napoleon's wife Josephine, and had his

duchy raised to a kingdom in 1806. In 1813 he joined the league against France.

Maximinus (maks-i-mi'nus), CAIUS JULIUS VERUS, a Roman emperor, the son of a peasant of Thrace. He entered the Roman army under Septimus Severus before 210, and gradually rose in rank until, on the death of Alexander Severus, he caused himself to be proclaimed emperor, A.D. 235. He was successful in his German campaigns, but his acts of barbarity and tyranny provoked an insurrection, in the attempt to quell which he was assassinated by his own soldiery, in A.D. 238. He is represented as being of immense stature and strength.

Maximum (mak'si-mum), the greatest quantity or degree fixed, attainable, or attained, in any given case as opposed to *minimum*, the smallest. In mathematics and physics maximum is used also for the value which a varying quantity has at the moment when it ceases to increase and begins to decrease.

Maxwell (maks'wel), JAMES CLERK, born at Kirkcudbright in 1831; died in 1879. He was educated at Edinburgh and Trinity College, Cambridge, where in 1854 he was second wrangler. He held the professorship of natural philosophy in Marischal College, Aberdeen, in 1856-60; afterwards the chair of physics and astronomy in King's College, London, 1860-68, and the professorship of physics in Cambridge from 1871 until his death. He published treatises on *Electricity and Magnetism*, *The Theory of Heat*, *Matter and Motion*, etc., and won high esteem among scientists for his powers of deduction and mathematical analysis.

May (mā), the fifth month in the year, but third in the old Roman calendar, has thirty-one days. The Romans regarded it as unlucky to contract marriages during its course—a superstition still prevalent in some parts of Europe. On the first of May the old Celtic peoples held a festival called Beltane (see *Beltane*). In former days outdoor sports and pastimes on the first of May were very common, and are not yet entirely given up. They included the erection of a *May-pole* decorated with flowers and foliage, round which young men and maidens danced, one of the latter being chosen for her good looks as queen of the festival, or 'Queen of the May.'

May, SAMUEL, REVEREND, abolitionist, born at Boston, Massachusetts, in 1810; died in 1899. He was graduated at Harvard in 1829; was pastor of a Unitarian church, 1834-40; was general agent of the Massachusetts Anti-Slavery Society, 1847-61; also of the American Anti-Slavery Society. He was a regular contributor to the *Liberator* and other anti-slavery literature.

May, THOMAS ERSKINE, born in 1815; died in 1886. He became assistant librarian to the House of Commons in 1831, and held other positions. He was the author of *A Treatise on the Law, Privileges, Proceedings, and Usage of Parliament* (1844); *The Constitutional History of England since the Accession of George III* (1760-1860); and a history of *Democracy in Europe* (1877). He was subsequently created Baron Farnborough.

Mayaguez (mā-yä'gwes), a seaport town on the west coast of the West Indian island of Porto Rico. Pop. 16,563.

May-apple, a plant, *Podophyllum peltātum*, nat. order Berberidaceæ (barberries). It is a native of North America, and its creeping rootstalk affords an active cathartic medicine known as *podophyllin*. The yellowish pulpy fruit, of the size of a pigeon's egg, is slightly acid, and is sometimes eaten.

May-apple (*Podophyllum peltatum*).

Mayas (mi'az), a race of Indians inhabiting Yucatan and the adjacent regions of Mexico and Central America, believed to be the descendants of those who built the great ruined cities of these parts.

Maybole (mā'bōl), a police burgh of Ayrshire, Scotland, 49 miles S. S. W. by rail from Glasgow. It contains an old castle, at one time the town residence of the Ailsa family. Shoemaking is the chief industry. Pop. 5892.

Mayence (mā-yäns). See *Mainz*.

Mayenne (mā-yen), a department of northwestern France, named from the small river Mayenne, which joins with the Sarthe to form the Maine; area, 1996 square miles. The surface is rather hilly or broken, but the soil is good and yields corn, flax, hemp, apples, etc. Coal and slate are obtained in small quantities. Laval is the capital. Pop. (1906) 305,457.

Mayenne, a town of France, in the above department, on a river of same name, 17 miles N. N. E. of

Laval. Its principal edifices are two churches, a town house and a picturesque old castle. Pop. 10,020.

Mayfield, a city, county seat of Graves Co., Kentucky, 36 miles S. of Paducah. It has woolen and flour mills and is in a tobacco and grain region. Pop. 5916.

Mayflower, THE, a small vessel which brought the Pilgrim Fathers from Southampton, England, to Plymouth, Mass.

Mayflower Descendants, SOCIETY OF, a patriotic association established in New York in 1894. It is open to lineal descendants of the Pilgrims who came over in the Mayflower in 1620, including all signers of the compact. Its objects are to preserve the memory and records of the Mayflower Pilgrims.

Mayhew (mā'hū), HENRY, born at London in 1812; died in 1887. He was educated at Westminster school and entered the law office of his father; joined the literary profession as author of the farce, *The Wandering Minstrel;* and started a comic paper called *Figaro* in London which was succeeded by *Punch* (1841).

Maynard (mā'nard), EDWARD, inventor, born at Madison, New Jersey, in 1813; died in 1891. He became a dentist and was the inventor of many surgical instruments; but is best known for his breech-loading rifle, patented in 1851, and the forerunner of the modern improved rifle.

Maynard, a town (township) in Middlesex Co., Massachusetts, containing a manufacturing village of same name, 26 miles W. of Boston. It has large woolen and powder mills. Pop. of town 6500.

Maynooth (mā'nōth), a market town of Kildare, Ireland, 13 miles W. N. W. of Dublin. It has a Protestant and a Roman Catholic church, and the well-known college of St. Patrick (see next article). Pop. about 1400.

Maynooth College, or ST. PATRICK'S COLLEGE, the chief college of the Catholic University of Ireland, was founded in 1795 by an act of the Irish parliament, for the education of the Irish Roman Catholic clergy. The annual vote from the British parliament for its maintenance was changed in 1845 to a permanent endowment of £26,000, and a sum of £30,000 for new buildings granted, while this again was commuted by the Irish Church Act (1869) for a lump sum of £372,276. All the students are destined for the priesthood, and all are resident within the building. The college buildings consist of an old and a new quadrangle, the latter a fine Gothic structure.

Mayo (mā'yō), a western maritime county of Ireland, in Connaught; area, 2157 sq. miles. The county is in many parts extremely mountainous, its highest summit reaching 2680 feet. The principal river is the Moy, and the largest lakes are Conn and Mask, the latter only partly in the county. Iron ore abounds, but remains unwrought; there are several valuable slate quarries. Oats form the chief crop; and barley, bere, rye, potatoes and turnips are grown; but pasturage is more attended to than tillage, only a small part of the soil being arable. The fisheries are productive. Principal towns, Castlebar (the county town), Ballina and Westport. Pop. 199,168.

Mayo, HENRY THOMAS, rear-admiral of the U. S. Navy, was born at Burlington, Vt., in 1856, graduated from Annapolis in 1876, advanced through various stages and was promoted to rear-admiral in 1913. He made history in 1914 by demanding an apology from the Mexican commander and the firing of a national salute of 21 guns to the United States flag to make amends for the arrest of the crew of the dispatch boat *Dolphin* at Tampico while loading gasoline into a whaleboat. He became commander-in-chief of the U. S. Atlantic Fleet in 1917, with the rank of admiral.

Mayor (mā'ur), the chief magistrate of a city or corporate town in the United States and the British islands and colonies; in Scotland called *provost.* In the United States the mayor is elected by the qualified voters of the city or town for a certain term of years. The power and authority which mayors possess, being given to them by local regulations, vary in different places. The Mayors of London, York and Dublin are each called 'lord mayor'; the Lord Mayor of London having the further title of 'right honorable,' first allowed in 1354 by Edward III.

Mayotte, or MAYOTTA (mā-yot'ta), an island in the Indian Ocean, one of the Comoros, at the northeast entrance of the Mozambique Channel, and a French colony. It is about 30 miles long by 20 miles broad, and some of its volcanic peaks are nearly 2000 ft. high. Pop. 11,640.

Maysville (mās'vil), capital of Mason Co., Kentucky, on the Ohio River, 65 miles above Cincinnati. It is an important shipping point for tobacco and wheat, and has varied manu-

factures, including cotton, shoes, cigars, pulleys, etc. Pop. 6141.

May-weed, a European plant (*Anthemis Cotula*), nat. order Compositæ. It is a troublesome weed in corn, and difficult to eradicate. It has daisy-like flowers, finely divided leaves, and an unpleasant smell, and sometimes blisters the hands of reapers.

Maywood, a village of Cook Co., Illinois, 10 miles w. of Chicago. It has steel works. Pop. 8053.

Mazamet (mȧ-zȧ-mȧ), a town of France, department of Tarn, on the Arnette, 32 miles s. s. e. Alby. It has manufactures of coarse woolens, flannels and moleskins. Pop. (1906) 11,370.

Mazanderan (mȧ-zan-der-ȧn'), or MAZENDERAN, a province of Persia, bounded on the north by the Caspian. Along the Caspian Sea the land is flat and fertile, but southward it rises rapidly into the spurs of the Elbruz Mountains. Sugar-cane, rice, cotton and mulberry trees grow luxuriantly. The capital is Sari, and the population of the province is estimated at 300,000.

Mazarin (mȧ-zȧ-ran), JULES, or GIULIO MAZARINI, first minister of Louis XIV and cardinal, an Italian by origin, born in 1602; died in 1661. He was educated at Rome by the Jesuits, thence proceeded to the University of Alcala in Spain; entered the pope's military service, and distinguished himself by diplomatic ability, for which he was rewarded with two canonries, and the appointment of nuncio to the court of France (1634-36). Here he gained the favor of Richelieu; accepted service from the king, and became a naturalized citizen of France; was made a cardinal in recognition of his diplomatic services in Savoy; and in 1642, when Richelieu died, promptly succeeded him. On the death of Louis XIII the queen, Anne of Austria, became regent for her young son, Louis XIV, and it was thought that Mazarin would be dismissed; but instead he gained over the queen-regent, and made himself master of the nation. Two parties in the state rebelled against this usurpation of supreme power by the cardinal. The parliament of Paris denounced his increasing taxation, while the nobility dreaded his supremacy, and the combination of these malcontents resulted in the civil war of the Fronde (which see). As the immediate result of the conflict, Mazarin had to go into exile, but through means of intrigue he formed a powerful royal party in the state, gained General Turenne to his cause, and finally returned to his position at court in 1653. During the succeeding eight years he remained all-powerful in France; pursued the policy of Richelieu in foreign affairs; made an alliance with Cromwell; brought the Rhine provinces under the headship of France, and in the treaty of the Pyrenees humiliated Spain, and gained much of French Flanders. Just as his foreign policy was successful, so was his home policy disastrous. He did nothing for the people but increase their taxes to fill an impoverished exchequer. Yet when he died Mazarin left an enormous fortune to his nieces, whom he had married into the most powerful families of Italy and France.

Mazarine Bible, an edition of the Latin Vulgate discovered in the library of Cardinal Mazarin. It was from this that John Guttenberg (1450-55) printed the first book in which metal types were used.

Mazarrón (mȧ-thȧr-rōn'), a town of Southern Spain, province Murcia, near the Mediterranean Sea, on which it has a harbor. It has mines of iron and argentiferous lead. Pop. 23,284.

Mazatlán (mȧ-sut-lȧn'), a seaport in Mexico, in the state of Sinaloa, at the entrance into the Gulf of California. It forms the outlet for the gold and silver of the neighboring mines, and imports considerable quantities of English goods. Pop. (1912) 21,219.

Mazeppa (mȧ-zep'ȧ), JOHN, Hetman of the Cossacks, born about 1645. He became page to the king of Poland, and being detected in an intrigue with a Polish lady of high rank, Mazeppa was bound naked upon an untamed horse by her husband, and cast loose. He was found and released by some peasants, and afterwards joined the Cossacks, where his skill, sagacity and strength procured him the position of hetman in 1687. He gained the confidence of Peter the Great, who made him prince of the Ukraine; but having entered into a treasonable intrigue with Charles XII he suffered defeat with the Swedish monarch at Pultawa, fled to Bender, and there died in 1709. He is the hero of a poem by Lord Byron, and a drama by Pushkin.

Mazurka, or MAZOUR'KA (ma-zōr'-ka), a lively Polish round dance in ⅜ or ¾ time and generally danced by four or eight pairs. It is quicker than the polonaise. The name is also applied to the music.

Mazzara (mȧt-zȧ'rȧ), a seaport and cathedral town of Sicily, on the south coast of the western extremity, surrounded by Moorish walls. Pop. 20,130.

Mazzarino (mät-sä-rē'nō), a town of Sicily, province Caltanissetta. Pop. 15,266.

Mazzini (mät-sē'nē), GIUSEPPE, an Italian patriot, born at Genoa in 1805; died at Pisa in 1872. His father was a physician and a professor in the university, and Mazzini studied with a view to follow this profession, but afterwards took a new bent and was graduated (1826) in law. While he was an advocate he turned his attention to literature, his first significant essay being *Dante's Love of Country*. As his writings grew more distinctly liberal in their politics the government suppressed the *Indicatore Genovese* and the *Indicatore Livornese*, the papers in which they appeared. He afterwards joined the Carbonari, and was imprisoned in Savona for some months. On his release (1832) he was exiled to Marseilles, but he was compelled by the French government to retire into Switzerland. During the following five years he planned and organized various unsuccessful revolutionary movements, until, in 1837, he was expelled by the Swiss authorities and sought refuge in London. During the revolutionary movements of 1848 he proceeded to Italy; served for a time under Garibaldi, and when the pope fled from Rome he became president of its short-lived republic and made a heroic defense of the capital against the French, until compelled to surrender. From that time he continued to organize various risings in Italy, and the successful Sicilian expedition of Garibaldi in 1860 was due largely to his labors. When Italian unity was accomplished under a monarchy Mazzini accepted the results with reserve. The latter part of his life was spent chiefly between London and Lugano. He was buried at Genoa.

Mazzola (mät-sō'lä), or MAZZUOLI (mät-sy-ō'lē), GIROLAMO FRANCESCO MARIA (called *Il Parmigiano*, the Parmesan), a painter of the Lombard school, born at Parma in 1503; died in 1540. His earliest works were in the style of Correggio, but in his twentieth year he went to Rome, where he came under the influence of Raphael and Michael Angelo, and was patronized by Clement VII. After the sack of Rome in 1527 he went to Bologna. His paintings are numerous, both fresco and easel. He was the earliest Italian etcher, and many of his engravings yet exist.

McAdam (mak-ad'am), JOHN LOUDON, originator of the method of road construction known as 'macadamizing,' was born in Ayr, Scotland, in 1756, emigrated with his father to America in 1770, and favored England in the War of the Revolution. Returning to his native land he interested himself in road building and in 1815 was appointed superintendent of roads in Bristol, England. Here he had an opportunity to put his road-making improvements into practice. He was so successful in this that the House of Commons presented him with a sum of two thousand pounds ($10,000), and the macadamized road became general throughout Britain. The method consists in covering the highway or forming the road crust with small broken stones to a considerable depth, and consolidating them by carriages working upon the road, or by rollers so as to form a hard, firm and smooth surface. See *Road*.

McAdoo (mäk-ä-dōō'), WILLIAM GIBBS, American lawyer, cabinet officer and railroad official, was born in Marietta, Ga., in 1863. He was educated at the University of Tennessee and studied law in Knoxville while supporting himself as a deputy clerk in the United States Circuit Court for the Southern Division. In 1884 he was admitted to the bar and learned transportation while counsel for the Richmond and Danville Railroad. Going to New York he formed a law partnership with William McAdoo. He became interested in a partially completed tunnel under the North River, connecting the New Jersey shore with the metropolis, and developed the scheme into a $70,000,000 project of which the Hudson and Manhattan Railroad Company and the Hudson Terminal buildings were the two main parts. His success brought him into public notice and he was strongly favored for the gubernatorial nomination in 1910 by the progressive wing of the Democratic party. As a delegate to the Democratic National Convention in 1912 he was indefatigable in his support of Woodrow Wilson, and after Wilson's nomination he was appointed vice-chairman of the National Committee, and was practically director of the successful campaign. He became Secretary of the Treasury in President Wilson's cabinet in 1913 and performed invaluable service in connection with the Federal Reserve and Farm Loan boards, retaining his position in the cabinet during Wilson's second term. When, in December, 1917, the President took over control of the transportation systems of the country, McAdoo became Director-General of Railroads, which meant the supervision of approximately 260,000 miles of single track, an investment of over $16,000,000,000, and the employment of some 1,700,000 people.

McAlester, a city of Pittsburg county, Oklahoma, 62 miles s. by w. of Muskogee. Pop. 12,954.

McAllister (m'-kăl'is-tĕr), WARD, an American social leader, born in Savannah, Ga., in 1830; died in 1895. Coming to New York he devoted himself to social life and became the most conspicuous leader of New York society. He is best remembered by his remark that 'smart society' in New York included only about 400 persons. From this the term of New York's 'Four Hundred' arose. He contributed much to the press on society matters in his later years and wrote a book entitled 'Society as I Have Found It' (1890), which did much to weaken his influence.

McAll Mission, the largest Protestant mission in France, founded in 1872 by the Rev. Robert W. McAll, an English Congregational minister, and his wife. It has now numerous stations, and has been an active reconstructive force in the midst of French protestantism.

McAlpine (măk-ăl'pin), WILLIAM JARVIS, an American civil engineer, born in New York City April 30, 1812; died at New Brighton, Staten Island, N. Y., February 16, 1890. He received some education in schools at Newburgh and Rome, N. Y., and then began his career as a rodman on canal work at Carbondale, Pa. After a number of engagements on rivers, canals and railways he became engineer in charge of many important public and private water systems, including those of Brooklyn, Montreal, Philadelphia, New York and others. He became engineer of the United States Bureau of Yards and Docks and as such had charge of the construction of the great stone dock of the Brooklyn Navy Yard. He was State Engineer of New York (1852-54) and a railroad commissioner of that state (1854-56). He was connected with many railroads in an engineering capacity, being engineer and vice-president of the Erie (1858), the Galena and Chicago (1857), the Ohio and Mississippi, 1861-63, besides being engineer-in-chief of many other projects. He found time to write a number of important papers on engineering subjects and was a member of many engineering societies both in the United States and abroad.

McArthur, ARTHUR, soldier, born in Massachusetts in 1845; served throughout the Civil war, and entered the regular army as lieutenant after the war. He served in the Spanish war in the Philippines, was promoted brigadier-general in the regular army in 1900 and major general in 1901. He retired in 1909 and died September 5, 1912.

McArthur, DUNCAN, an American soldier, born in Dutchess county, New York, in 1772; died in 1839. He served as a volunteer in campaigns against the Indians in Pennsylvania. In the war of 1812 he was made colonel of an Ohio volunteer regiment and promoted to brigadier-general in 1813. In 1814 he was put in command of the Army of the West. He was a member of the Ohio State Legislature from 1815-21, a member of Congress, 1823-25 and governor of Ohio, 1831-33.

McClintock, JOHN, an American theologian and educator, born in Philadelphia in 1814; died in 1870. He was professor of mathematics and classics in Dickinson College, Carlisle, Pa. (1837–48); edited the Methodist Quarterly Review (1848–56), and was pastor of St. Paul's Church, New York (1856–60); had charge of the American chapel in Paris (1860–64), and in 1867 became president of Drew Theological Seminary at Madison, N. J. His great work was McClintock and Strong's *Cyclopedia of Biblical, Theological and Ecclesiastical Literature.*

McCloskey (ma-klos'ki), JOHN, cardinal, born in Brooklyn, New York, in 1810; died in 1885. In 1834 he was ordained priest and in 1844 was made coadjutor of the diocese of New York. In 1847 he was transferred to the See of Albany; in 1864 he was made Archbishop of New York and in 1875 he was appointed cardinal-priest.

McComb, a city of Pike Co., Mississippi, 100 miles N. of New Orleans. It has railroad shops, cotton mills, etc. Pop. 6237.

McCook, HENRY CHRISTOPHER, American theologist and entomologist, born at New Lisbon, Ohio, in 1837; died in 1911. As a naturalist, he devoted himself to the study of ants and spiders, and wrote *Mound-Making Ants, American Spiders, The Tenants of an Old Farm,* and other works. He was a brother of Alexander McDowell McCook (1831–1903), who served with distinction in the Civil war.

McCormick (ma-kor'mik), CYRUS H., inventor, was born at Walnut Grove, Virginia, in 1809. In 1831 he invented the reaping-machine, which has done much for the cause of agriculture. He died in 1884.

McCrie (ma-krē), THOMAS, a Scottish writer and clergyman, born in 1772; died in 1835. He studied in Edinburgh University; was licensed as a preacher by the Antiburghers; and in

1795 became minister to a congregation in Edinburgh. He contributed a series of papers on the Reformation (1802-06) to the *Christian Magazine*, and in 1811 published his well-known *Life of Knox*. This was followed in 1819 by the *Life of Andrew Melville*. It is upon these two works that his fame chiefly rests, but he also wrote *The History of the Reformation in Italy* (1827) and the *History of the Reformation in Spain* (1829), besides a volume of *Sermons*, etc.

McDowell, IRVIN, soldier, born in Franklin county, Ohio, about 1818; died in 1885. He was graduated at West Point, served in the Mexican war, and as brigadier-general in the regular army, commanded the Union forces at the battle of Bull Run in 1861. He commanded a corps in the second battle of Bull Run, 1862. He was promoted major-general in 1872; retired in 1882.

McGee (mak-gē'), THOMAS D'ARCY, born at Carlingford, Ireland, in 1825; became prominent in the Young Ireland party, and had to make his escape to the United States, where he soon made a name as a journalist. His views then underwent a change; he became an ardent royalist; went to Canada, and entered parliament in 1857. In 1864 he became president of the executive council, and up till near his death took a prominent part in the measures of the day. Obnoxious to the Fenians, he was assassinated by a member of that body in 1868.

McGee, W. J., ethnologist, born in Iowa in 1853. He made extensive explorations in connection with the U. S. Geological Survey, and in 1893 was placed in charge of the Bureau of American Ethnology. Resigned to take charge of the ethnologic section of the St. Louis Exposition in 1903; director of St. Louis public museum 1905-07; on the Inland Waterways Commission since 1907. Has written much on ethnologic and other subjects.

McGill (mak-gil'), JAMES, born at Glasgow, Scotland, in 1744; died at Montreal in 1813. He emigrated to Canada, and ultimately became one of the chief merchants in Montreal. He left property valued at $150,000 (now enormously increased in value), and $50,000 cash to found the university in Montreal which bears his name.

McGill University, an institution of learning at Montreal, Canada, founded in 1821 under a bequest from James McGill (see above). It is well equipped, has a library of 150,000 volumes, a faculty of 260 instructors and students numbering nearly 2000.

McHenry, FORT, a fortification at the entrance of Baltimore harbor, which was unsuccessfully bombarded by the British fleet in 1814. It is notable from the fact that *The Star Spangled Banner* was written at this time by Francis Scott Key, an American citizen, who was detained on board a British vessel and witnessed the bombardment.

McKeesport (mak-kēz'port), a city of Allegheny Co., Pennsylvania, at the confluence of the Monongahela and Youghiogheny rivers, 14 miles S. E. of Pittsburgh. Coal is mined near by and is the chief source of its prosperity. It has large blast furnaces, immense tube works, employing several thousand hands, railroad construction works, and manufactures of iron, steel, glass, etc. Natural gas is found here. Pop. 42,694.

McKees Rocks, a borough of Allegheny Co., Pennsylvania, 5 miles N. W. of Pittsburgh; a railroad center. Here are steel and iron works, car shops, with natural gas fuel. Coal and lumber are shipped. Pop. 14,702.

McKinley (ma-kin'lē), WILLIAM, President of the United States, was born at Niles, Ohio, in 1844. He served in the Civil war, attaining the rank of major, and was afterward attorney of Stark Co., Ohio. He twice served in the House of Representatives, being chairman of the Ways and Means Committee when the well-known tariff bill bearing his name was enacted. In 1884 and 1888 he was chairman of the Platform Committee in the Republican National Convention. He was elected Governor of Ohio in 1891, and reëlected in 1893. In 1896 he was the Republican candidate for President, and was elected, serving as the national executive through the Spanish war. In 1900 he was reelected by a largely increased majority over his former Democratic opponent, W. J. Bryan. On September 6, 1901, while attending the Pan-American Exposition at Buffalo, he was shot by an anarchist named Leon Czolgosz. After surgical treatment for the injuries caused by the two entering bullets, the President died September 14. Not only the United States, but every part of the globe mourned the loss. Funeral services were held throughout America and Britain on the day of his interment at Canton, Ohio, September 19. By McKinley's death Theodore Roosevelt became President of the United States. See *Roosevelt*.

McMaster (mak-mas'tēr), JOHN BACH, historian, born at Brooklyn, New York, in 1852. He be-

came a civil engineer, and in 1883 was made professor of American history in the University of Pennsylvania. He is well known for his able *History of the People of the United States* (8 vols.), covering the period from the formation of the Constitution to the Civil war.

Mead (mēd), LARKIN GOLDSMITH, sculptor, born at Chesterfield, New Hampshire, in 1835. He studied the art of sculpture, and in 1862 went to Florence for study. In 1865 he exhibited several works in New York city. Prominent among his productions are the statue of Lincoln on the monument at Springfield, Illinois, the statue of Ethan Allen in the capitol at Washington, and the colossal statue of 'Vermont,' made for the statehouse at Montpelier, and several other colossal statues and groups.

Meade (mēd), GEORGE GORDON, soldier, was born in Cadiz, Spain, where his father was United States consul, in 1815. He served in the Mexican and Seminole wars. In the Civil war he was especially distinguished. In 1863, as commander of the Army of the Potomac, at Gettysburg, he checked Lee's invasion of Pennsylvania, winning one of the most important battles of the war. When Grant assumed control of the Army of the Potomac he left the command of it, as far as possible, to General Meade. He was in every battle but two fought by the Army of the Potomac. He died in 1872.

Meadowlark, an American icteroid bird of the genus Sturnella. The *S. magna* is the best-known species and is brownish, or grayish above, with black and yellow beneath, and with a black crescent on the chest of the male. It is more correctly called the American starling, has a very sweet song, and is found from New Brunswick to the Gulf of Mexico.

Meadow-sweet, a well-known herbaceous plant *Spiræa ulmaria*, nat. order Rosaceæ. It grows in damp places, has pinnate leaves, and stems two feet high bearing corymbs of white fragrant flowers.

Meadville (mēd'vil), a city, seat of Crawford Co., Pennsylvania, 36 miles S. of Erie, on the main line of the Erie railroad, about midway between New York and Chicago. It is the center of a rich agricultural country and has numerous and varied industries, including the main shops of the Erie railroad. The city is the seat of Allegheny College (Methodist) and Meadville Theological College (Unitarian). Pop. 12,780.

Meagher (mā'her, or mā'er), THOMAS FRANCIS, soldier, was born in Waterford, Ireland, in 1823; died at Fort Benton, Montana, in 1867. He was a popular leader in the 'Young Ireland' party; found guilty of high treason, was sentenced to death, but transported to Van Diemen's Land. In 1861 he joined the Union army; organized the Irish Brigade, was engaged in the seven days' battles before Richmond, at Manassas and Antietam; and was wounded at Fredericksburg; served also in Tennessee and Georgia.

Measles (mē'zls), also called RUBEOLA, an acute infectious fever, chiefly affecting children. In a period of from ten to fourteen days after contagion, symptoms of the disease begin to appear in sneezing, watering of the eyes, hoarseness, a hard cough and high temperature. On the fourth day of the fever a rash appears in blotches, crescentic in form, first upon the temples, and gradually extends over the whole surface of the body. It begins to fade about the seventh day. The complications most to be dreaded are inflammations of the mucous membranes of the eye, ear and chest. The treatment consists in keeping the patient confined to bed in a warm room, relieving the chest by hot bathing or warm packing, reducing fever and preventing constipation. During convalescence give good, nourishing food.

Measures. See *Weights* and *Measures*.

Meath (mēth), a county of Ireland, province of Leinster, abutting on the Irish Sea; area, 906 sq. miles. Its coast line of 7 miles is low and sandy; there is no good harbor; the surface is generally level; and the principal rivers are the Boyne and the Blackwater. The land is mostly laid out in grass. Some coarse linens are manufactured and there are one or two woolen factories. Principal towns, Navan and Kells. Meath contains the royal seat, 'Tara of the kings,' the scene of St. Patrick's first preaching of Christianity. Pop. 67,497.

Meaux (mō), a town of France, department Seine-et-Marne, on the Marne, 24 miles E. N. E. of Paris. It has a fine Gothic cathedral, an episcopal palace, town-house, college, diocesan seminary, etc. Pop. (1911) 13,600.

Mecca, or MEKKA (mek'ka), a city of Arabia, about 60 miles from Jidda, its port on the Red Sea, and the birthplace of Mohammed, consequently the holiest city of the Mohammedan world. It stands in a narrow, sandy valley enclosed by sterile hills, and is ill supplied with water. In its center is the Beitu-'llah ('house of God'), or El-Haram ('the inviolable')—the great mosque

enclosing the Kaaba, occupying a square dividing the upper from the lower town. The city is annually filled at the time of the Hajj or pilgrimage to the Kaaba (which see), when apartments in almost every house are hired to strangers. This pilgrimage, enjoined by Mohammed on all his followers, is the sole foundation of Mecca's fame, and the only source of its wealth and occupation. A number of the inhabitants claim to be Sherifs, or direct descendants of Mohammed, and the city is under a grand Sherif. It is dangerous for an infidel to visit Mecca, but R. F. Burton visited it in disguise in 1853. The pop. is estimated at about 50,000, with the periodical addition of from 100,000 to 150,000 pilgrims.

Méchain (mā-shaṇ), PIERRE FRANÇOIS ANDRÉ, a French astronomer, born in 1744; died in 1804. His name is notably connected with the measurement of a degree of the meridian in order to get a natural basis for the new French decimal system of weights and measures.

Mechanical Powers (me-kan'i-kal) the simple instruments or elements of which every machine, however complicated, must be constructed; they are the lever, the wheel and axle, the pulley, the inclined plane, the wedge and screw. See those terms.

Mechanics (me-kan'iks), the term originally used to denote the general principles involved in the construction of machinery. Subsequently the term became divorced from all direct connection with practical applications, and dealt entirely with abstract questions in which the laws of force and motion were involved. In this sense mechanics is usually divided into *dynamics*, which treats of moving bodies and the forces which produce their motion; and *statics*, which treats of forces compelling bodies to remain at rest. See *Dynamics* and *Statics*.

Mechanicsville, a town of Saratoga Co., New York on the Hudson River, 20 miles N. of Albany. It has manufactures of knitted goods, pulp and paper, brick, shirts, collars, etc. Pop. 9000.

Mechitarists (me-chit'a-rists), an important section of Armenians acknowledging the authority of the pope, but retaining their own ritual with a few alterations. They have printed the best editions of Armenian classics. The name originated from *Mechiter* Da Petro, who founded a religious society at Constantinople for the purpose of disseminating a knowledge of the old Armenian language and literature.

Mechlin (mek'lin; French, *Malines*; Flemish, *Mechelen*), a town of Belgium, on the Dyle, in the province of and 14 miles S. S. E. of Antwerp. Its principal edifices are its cathedral, an ancient Gothic structure; the church of Nôtre Dame, the church of St. Peter and St. Paul, and the archbishop's palace. The manufactures, which are numerous, consist of the famous Mechlin lace, felt and straw hats, woolen stuffs, etc. Pop. 56,108.

Mecklenburg-Schwerin (mek'lin-bûrg-shvā-rēn'), a grand-duchy of the German Empire; bounded on the north by the Baltic Sea, elsewhere chiefly by Prussia and Mecklenburg-Strelitz; area, 5135 square miles; capital, Schwerin The surface is flat, except where a ridge of low hills forms the watershed between the Elbe and the Baltic. The sea coast is indented by several inlets, and lakes are very numerous. The streams flow partly to the Elbe, partly to the Baltic. The chief products are corn, peas, beans, potatoes, beets and turnips. Both horses and cattle are exported. Distilling is largely carried on. The government is intimately connected with that of Mecklenburg-Strelitz. Each duchy has a separate legislative body, but both meet annually, and legislate for the whole of Mecklenburg. Pop. (1910) 639,879.

Mecklenburg-Strelitz (strā'lits), a grand-duchy of the German Empire; capital, Neu-Strelitz. It consists of two larger and several smaller districts; the former separated by the interposition of Mecklenburg-Schwerin, and the latter existing in separate patches. The whole area is estimated at 1052 square miles. The physical features and general character of this duchy are similar to those of Mecklenburg-Schwerin (which see). Pop. (1905) 103,451.

Meconic Acid (me-kon'ik), an acid with which morphia is combined in opium. When pure, meconic acid ($C_7H_4O_7$), forms small, white crystals. Its aqueous solution forms a deep red color with the persalts of iron, which therefore are good tests for it.

Medallion (me-dal'yun), a term applied to the large antique medals struck in Rome and in the provinces by the emperors. They were usually of gold or silver, and exceeded in size the largest coins of these metals of which the name and value are known. They were probably struck to commemorate persons or events. In architecture the term is applied to any circular or oval, and sometimes square, tablet, bear-

ing on it objects represented in relief, as figures, heads, animals, flowers, etc.

Medals. See *Numismatics.*

Medea (me-dē'a), in Greek mythology, daughter of Æetes, king of Colchis. She fell in love with Jason the Argonaut and enabled him to obtain the celebrated golden fleece (which see), and lived with him for ten years, until he discarded her in favor of Glauce or Creusa, daughter of King Creon. In revenge she sent Glauce a bridal robe which enveloped her in consuming flame, and thereafter she slew her own children by Jason. There are many versions of this Greek myth, and it has been a favorite theme alike with painter and dramatist. Euripides wrote a well-known tragedy of this name. See also *Jason* and *Argonauts.*

Medellin (me-del-yēn'), a city of Colombia, capital of the department of Antioquia, 150 miles N. W. of Bogotá. Pop. 71,004.

Medford (med'furd), a city of Middlesex Co., Massachusetts, on the Mystic River, 5 miles N. N. W. of Boston. It is the seat of Tufts College, and contains several historical buildings, the Craddock House dating from 1677. It has large print works, and manufactures of felt boots, woolen goods, chemicals, etc. Pop. 23,150.

Medford, a city of Jackson Co., Oregon, 6 miles E. of Jacksonville; a wholesale and jobbing center, with farming, orchard, mining and timber interests. Pop. 10,500.

Media (mē'dia), an ancient kingdom in Western Asia, corresponding nearly to the northwestern portion of modern Persia. According to the Greek historians, Deioces, B.C. 708-655, was the first native king, but the true founder of the great Median monarchy was Cyaxares, 633-593 B.C. He extended his dominion over the highlands of Southern Armenia and Asia Minor as far as the Halys, overthrew the Assyrian monarchy, and in conjunction with Nabopolassar, king of Babylon, destroyed Nineveh 607 or 606 B.C. Astyages, the successor of Cyaxares and the last king, reigned for thirty-five years, B.C. 593 to 558, when he was overthrown or deposed by Cyrus. He is supposed by some authorities to be the Darius the Mede mentioned in the Book of Daniel as reigning over Babylon after its conquest by the Persians. The Medes and Persians, from their near resemblance to each other, appear to have amalgamated readily after the conquest or revolution which gave the ascendency to the latter. Media henceforward formed part of the Persian Empire, and shared its fate.

Mediastine, Mediastinum (mē-di-as-tī'num), the membranous septum of the chest, formed by the duplicature of the pleura under the sternum, and dividing the cavity into two parts.

Medical Jurisprudence. See *Forensic Medicine.*

Medici (mā'di-chē), a Florentine family who rose to wealth and influence by successful commerce, and who continued to combine the career of mer-

Cosmo de' Medici.

chants and bankers with the exercise of political power, a princely display of private munificence, and a liberal patronage of literature and art. The Medici were associated with the history of the Florentine republic from an early period, but they first became prominent in the person of Salvestro, who became gonfalonier in 1378.—GIOVANNI DE' MEDICI (1360-1429) amassed great riches by trade; rendered great services to the city, and in 1421 became gonfalonier. He was succeeded by his son COSMO (the elder, 1389-1464), surnamed the *father of his country.* Cosmo acquired immense wealth and influence, and laid the foundation of his reputation by the munificent patronage of art and letters, and the conjunction of consummate statesmanship with his commercial enterprise. He was for thirty-four years the sole arbitrator of the re-

public and the adviser of the sovereign houses of Italy.—His grandson, LORENZO THE MAGNIFICENT (1449-92), was the second great man of the house of Medici. He governed the state in conjunction with his brother GIULIANO (1453-78) till the latter was assassinated by the Pazzi, a rival Florentine family. Escaping from this massacre he sustained a war with Ferdinand of Naples, with whom he signed a definitive peace in 1480. The rest of Lorenzo's reign was passed in peace and in those acts of profuse liberality and magnificent patronage of arts and sciences in which he rivaled or excelled his grandfather. He left three sons—PIERO (1471-1503), GIOVANNI (afterwards Pope Leo X), and GIULIANO, duke of Nemours. Piero succeeded his father, but was deprived of his estates when the French invaded Italy in 1494. He finished his career in the service of France. His eldest son, LORENZO, came to power by the abdication of his uncle, Giuliano, who became Duke of Urbino. He died in 1519, leaving a daughter, the famous Catherine de Medici, queen of France. After several reverses in the family, Alessandro, an illegitimate son of the last named Lorenzo, was restored to Florence by the troops of Charles V, and by an imperial decree he was declared head of the republic, and afterwards Duke of Florence. The next name of importance in the family is that of Cosmo 'the great,' in 1537 proclaimed Duke of Florence and afterwards Grand-duke of Tuscany. A learned man himself, he was a great patron of learning and art, a collector of paintings and antiquities. He died in 1574.—FRANCISCO MARIA, his son, obtained from the Emperor Maximilian II, whose daughter, Joanna, he had married, the confirmation of his title of grand-duke in 1575, which continued in his family until it became extinct in 1737 on the death of Giovanni Gasto, who was succeeded by Francis, duke of Lorraine. See *Tuscany*, *Catherine de Medici*, *Marie de Medici*.

Medicine (med'i-sin), the science of diseases, and the art of preventing, healing, or alleviating them. It deals with the facts of disease, with the remedies appropriate to various diseases, with the results of accident or injury to the human body, with the causes that affect the origin and spread of diseases, and with the general laws that regulate the health of individuals and the health of communities. It is broadly divided into two great sections, surgery (which see) and medicine proper. A department related to both is obstetric medicine or midwifery, dealing with childbearing and with the diseases peculiar to women. With this department is closely connected that which comprehends the diseases of children. There are also departments dealing with special organs, such as those relating to diseases of the eye, of the ear, of the throat, of the skin, etc., each of which occupies its own domain of knowledge, and is represented by highly-trained specialists. The treatment of the insane, as it is concerned with nervous diseases and correlated states of other organs, is an integral part of medical practise. War also has given rise to special developments of medical and surgical science, viz.: military hygiene and military surgery; and the administration of the law has created a special branch—medical jurisprudence or forensic medicine.

At first all diseases, in common with other phenomena, were attributed to supernatural causes, and the direct doings of unseen beings, and had to be exorcised by ceremonies, prayers and adjurations. In course of time it was recognised that diseases were natural phenomena, but at the same time each was held to be a principle or entity distinct from its effects, and each disease was supposed to have a specific remedy—something that would actually cure the disease. Such views led to the adoption of various systems of treatment. Several of these are of recent development. For instance, one school holds that only vegetable remedies are appropriate to the treatment of diseases. Another school upholds the hydropathic system, or the virtues of the bath in one or other of its forms, as a universal panacea for all human ills. A third maintains the application of the homœopathic principle that similars are cured by similars, that is to say, diseases are cured by substances having, in small doses, an action on the body similar to that of the disease, so that one might treat diseases by a series of fixed and specific formulæ all depending on this single principle. A fourth, of late origin, maintains the curative powers of skilful manipulation of the bones, muscles and nerves. Finally, even in orthodox medical circles, there is a strong disposition to attribute success of treatment to particular drugs, and to simply act on a principle contrary to that of homœopathy, viz., that diseases are cured by contraries, that is, by remedies having an action on the body the reverse of that of the disease. Most of these opinions depend on a mistaken view of disease. Anything that interferes with the free and healthy action of any part of the body produces a state of disease, and the symptoms of the disturbance manifest the disease. For instance, in

the case of zymotic diseases, they are caused by the entrance into the body of living germs which grow and multiply in the blood and tissues, and interfere with the various organs. These germs are, however, not the disease, but the cause of the disease. Again many diseases are due, not to something that has entered the body, but to a breaking down of a certain part of the system. In these the physician seeks to restore as far as possible the conditions of healthy action; to remove if he can the cause of the disease, to relieve pain, and to control symptoms so as to direct them towards recovery. In germ diseases, treatment by inoculation of prepared lymphs, derived from cultures of the specific microbes causing the disease, is now widely practised, the oldest example of it being that of vaccination in smallpox.

The chief departments of medical science may be given as follows:—The science of health is called *hygiene*, or as far as it relates to the regulation of the diet, *dietetics*. *Pathology* is the science of disease, of that in which it consists, its origin, etc. *Nosology* treats of the various sorts of diseases, their origin and symptoms, and strives to arrange diseases according to a scientific classification. *Pathological anatomy* deals with the mechanical alterations and changes of structure. *Therapeutics* is the science of the cure of diseases, often divided into *general*, treating of the subject of cure in general, its character, etc.; and *special*, of the cures of the particular diseases. *Surgery* treats of the mode of relieving derangements by operative means. *Obstetrics* treats of the modes of facilitating delivery. *Materia medica* is the science of medicines, their external appearance, history and effects on the human organization. *Pharmacy* teaches how to preserve drugs, etc., and to mix medicines. *Clinics* applies the results of all these sciences at the bedside of the patient. (See the various medical articles under separate heads.) Among names famous in the history of medicine, may be mentioned Hippocrates, the father of medicine; Celsus, Galen, Avicenna, Paracelsus, Vesalius, Van Helmont, Sylvius, Stahl, Harvey, Boerhaave, Hoffman, Brown, Hunter, Jenner, Hahnemann, Physick, Gross, Agnew, Holmes, Lister, etc.

Medicine Hat, a city of Alberta province, Canada, on the Saskatchewan River. Pop. (1913) 16,000.

Medick (med'ik; *Medicago*), a genus of plants, nat. order Leguminosæ, nearly allied to the clover. For purple medick or lucerne, see *Lucerne*. Black medick (*M. lupulina*), so called from the black color of the ripe pods, is also known, from the color of its flower, as *yellow lucerne*. There are about forty species, natives of Europe, Western Asia and Northern Africa.

Medina (mē-dī'na; Arabic *Medineh-el-Nebi*, 'The Prophet's City'), a city in Arabia, containing the tomb of Mohammed, about 250 miles north by west of Mecca, in the most fertile spot of all Hejaz. The Mosque of the Prophet, which is the only building of importance, contains the sacred tomb, enclosed with a screen of iron filagree. Though the pilgrimage to the tomb is not considered by Mohammedans as an imperative duty, like that to the Kaaba, yet it is estimated that one-third of the Mecca pilgrims go on to Medina. Unbelievers enter the city at peril of their lives. Pop. about 40,000.

Medina, a town of Orleans Co., New York, on the Erie Canal, 41 miles W. of Rochester. The picturesque Medina Falls are in the vicinity. It has foundries, furniture factories, clock works, canneries, etc. Pop. 7250.

Medina-Sidonia (sē-dō'nē-ä), a town of Spain, in Andalusia, in the province of Cadiz, 23 miles E. S. E. of Cadiz city. Pop. 11,040.

Medinet-el-Fayoum (me-dē'net el fī-ōm'), a town of Egypt, capital of the Fayoum, about 25 miles west of the Nile, a place of active trade. Pop. about 40,000.

Mediterranean Sea (med-i-tēr-rā'-nē-an; Lat. *Mare Internum*), the great inland sea between Europe, Asia and Africa, about 2200 miles long and 1200 in extreme breadth. It communicates on the west with the Atlantic Ocean by the Strait of Gibraltar, and on the northeast with the Black Sea through the Sea of Marmora and the Straits of the Dardanelles and Constantinople. It is very irregular in shape, and is divided, near its center, into two distinct and not very unequal portions, an eastern and a western, the latter lying west of Italy, Sicily and Cape Bon in Africa. The other important subdivisions are the Adriatic Sea or Gulf of Venice, and the Ægean Sea or Archipelago. The largest and most important islands are Sicily, Corsica and the Balearic Isles, in the west division; and Cyprus, Rhodes, Crete, the Ionian Isles and Malta, in the east division. The principal rivers which discharge themselves directly into the Mediterranean are the Ebro, Rhône, Po and Nile. The depth varies from 30 to 2150 fathoms. Owing to the very narrow channel which connects the Mediterranean with the

main ocean there is very little tide; though on parts of the African coast, etc., a rise of more than 6 feet sometimes occurs. The Mediterranean abounds with fish, and also furnishes the finest coral and sponges. It is a great highway of traffic.

Medium (mē'dī-um), the name given to one who professes to be able to communicate with the spirits of the departed and bring messages from them to friends on earth; usually known as a spiritual medium.

Medjidie (med-jid'i-ā), a Turkish order of knighthood, instituted in 1852, and conferred on many British and other officers who took part with Turkey in the Crimean war.—The term is also applied to a Turkish golden coin worth about $4.50.

Medlar (med'lär), a tree of the genus *Mespilus*, the *M. germanica*, found wild in several parts of Central Europe, and cultivated for its fruit, which is remarkable for its acerbity when first gathered. It loses this acerbity after a few weeks' keeping.

Medoc (me-dok'), a district of Western France, in the department of the Gironde. It is celebrated for its wines. See *Bordelais Wines*.

Medulla (me-dul'a), or MARROW, in animals, the highly vascular connective tissue, interspersed with adipose or fat-cells, which fills up the hollow shafts or *medullary canals* of long bones, and which forms a center of nourishment for the inner osseous material of which the bone is composed. The *medulla oblongāta* is the upper enlarged portion of the spinal cord, while the *medulla spinālis* is the continuation downwards of the brain matter. In vegetable physiology the *medulla* is otherwise known as the *pith*. See *Botany*.

Medu'sa. See *Gorgons*.

Medusidæ (me-dū'si-dē), the jelly-fishes or sea-nettles, a name given to cœlenterate animals of the class Hydrozoa, being free and oceanic animals, the most typical of which consist of a single *nectocalyx* or swimming-bell, from the roof of which one or several polypites are suspended. The nectocalyx is furnished with a system of canals, and a number of tentacles depend from its margin. A number of the medusæ formerly believed to be distinct animals have been shown to be really the free, generative buds of other Hydrozoa.

Medway (med'wā), a river of England, which flows in a winding course across Kent, past Tunbridge and Maidstone, to Rochester and Chatham, where it spreads out into a broad estuary, joining that of the Thames. It is navigable to Maidstone; length 70 miles.

Meehan (mē'han), THOMAS, botanist, born in England in 1826; removed to Philadelphia at an early age, and became prominent among American botanists for active research. He was botanist of the Board of Agriculture of Pennsylvania. He died in 1901.

Meerane (mā'rā-ne), a town in the kingdom of Saxony, 12 miles N. N. E. of Zwickau, with manufactures of woolens, dye-works, etc. It has grown recently from an insignificant country town to a manufacturing center. Pop. (1905) 26,005.

Meerschaum (mēr'shąm), a hydrated silicate of magnesium, consisting of 60.9 parts silica, 26.1 magnesium, and 12.0 water, occurring as a fine white compact clay. It is found in Europe, but more abundantly in Asia Minor, and is manufactured into tobacco pipes.

Meerut (mē'rut), or MIRAT', a city, cantonment, and administrative center of the Northwest Provinces of India, situated between the Jumna and the Ganges, 36 miles northeast of Delhi. It is surrounded by a dilapidated wall enclosing narrow streets and wretchedly-built houses. The church is one of the largest in India, and there is also a Roman Catholic chapel, government schools, hospital, etc. Meerut was the scene of the first great outbreak among the Sepoys, in 1857. Being at an altitude of 800 feet above the sea, it is an agreeable and salubrious residence. Pop. 118,642.—The DISTRICT OF MEERUT occupies an area of 2379 square miles, and is the most fertile territory in the region known as the Doāb.

Megaceros. See *Elk* (*Irish*).

Megæra (me-jē'ra), one of the Furies (which see).

Megalichthys (meg-a-lik'this), a genus of fossil ganoid fishes of the carboniferous period, characterized by large smooth, but minutely punctured, enameled scales, some of which have been found as large as 5 inches in diameter, indicating a fish of great size.

Megalithic Monuments (meg'a-li-thick), large unhewn, or partly hewn, stones, or structures of such stones erected in prehistoric times, either as burial monuments or for religious or other purposes. Monuments of this kind are numerous, being found most abun-

dantly in North Africa, Europe, and India. They also exist in South, but in North America. They embrace classes: (1) *Menhirs*, tall, massive lars, or monoliths, standing upright in the ground or with their bases imbedded. (2) *Alignments*, monoliths arranged in lines. (3) *Dolmens*, chambers formed of upright stones roofed over by one or more capstones, forming a tumulus or cavern. (4) *Cromlechs*, circular, oval, or irregular enclosures formed by monoliths standing at some distance apart. Many examples of all of these exist, some remarkable for the great size of the stones handled.

Megalonyx (meg-a-lō'niks), a genus of fossil edentate mammals, allied to the sloth, but adapted for a terrestrial instead of an arboreal life, found in the upper tertiaries of America.

Megalosaurus (meg-a-lō-sa'rus), a fossil reptile found in the Oolite and Wealden strata. Its length has been estimated at between 40 and 50 feet. Its powerful, pointed and trenchant teeth indicate its carnivorous habits, and from its gigantic size and strength it must have been very destructive to other animals.

Megalotis (meg-a-lō'tis), the generic name of the fennecs.

Megaphone (meg'a-fōn), an instrument invented by Thomas A. Edison for carrying the sound of the voice long distances without the aid of wires. It consists of two large funnels which collect the waves of sound and transmit them to the ears by means of tubes. It is used in connection with the telephone to convey sound through a large hall. The word is also applied to an open-mouthed trumpet which enables the sound of the voice to be distinctly heard at a considerable distance.

Megapodius (meg-a-pō'di-us), a genus of rasorial birds, type of the family Megapodidæ, the best known and most remarkable species of which is the Australian jungle-fowl (*M. tumŭlus*), a large bird remarkable for erecting considerable mounds, composed of earth, grass, decayed leaves, etc., sometimes 15 feet high and 150 in circumference, and in the center of which, at a depth of 2 or 3 feet, it deposits its eggs, leaving them to be hatched by the heat of the fermenting vegetable mass. The leipoa and tallegalla are ak[illegible]

Megaptera (me-gap'tėr-a), a genus of whales of the family Balænidæ, including the hump-backed whales

Meg'ara, a town of Attica, Greece. See *Megaris*.

Megaris (meg'a-ris), a small district or state of ancient Greece, partly in Northern Greece, partly on the Corinthian isthmus. The only important town was Megara, situated a mile from the sea. Megaris had flourishing colonies at an early period, but afterwards became annexed to Attica.

Megatherium (meg-a-thē'ri-um), a fossil genus of edentate mammals, allied to the sloths, but having feet adapted for walking on the ground, found in the upper Tertiary or pampas deposits of South America. It

Megatherium restored.

was about 8 feet high and its body 12 to 18 feet long. Its teeth prove that it lived on vegetables, and its forefeet, about a yard in length and armed with gigantic claws, show that roots were its chief objects of search.

Megna (meg'na), a river or estuary of Bengal, which carries the waters of the Ganges and the Brahmaputra to the sea. Its most noteworthy characteristic is the 'bore' or tidal wave which advances swiftly at the height of 20 feet.

Megrim (mē'grim), the term applied when a horse reels, stands for a minute dull and stupid, or falls to the ground, lying for a time partially insensible. Such attacks are also called vertigo. They come on suddenly, and are most frequent during hot weather, and when the animal is drawing up hill. They indicate weakness of heart action, or disturbance of brain circulation by the pressure of tumors.

Mehemet Ali (meh'he-met), Viceroy of Egypt, born at Kavala, in Macedonia, in 1769; died in 1849. He entered the Turkish army, and served in Egypt against the French; rose rapidly in military and political importance; became pasha of Cairo, Alexandria, and subsequently of all Egypt. In

1811 he massacred the Mamelukes to the number of 4,0 in Cairo, and about 1200 over the country. He then commenced, by the orders of the Porte, a war of six years' duration against the Wahabees of Arabia, which was brought to a successful conclusion by his son Ibrahim, and secured him the possession of Hejaz. Ibrahim also aided in bringing a large part of the Soudan under Egyptian rule. By means of a vigorous domestic policy Mehemet reduced the finances to order; organized an army and a navy; stimulated agriculture, and encouraged manufactures. In 1824-27 he assisted the sultan in endeavoring to reduce the Morea, which led to the destruction of his fleet by the allied European powers at Navarino (1827). Subsequently he turned his arms against the sultan, and in his efforts to secure dominion over Syria by armed invasion he was so far successful (see *Ibrahim Pasha*) that the European powers had to interfere and compel him to sign a treaty in 1839, which gave him the hereditary pashalic of Egypt in lieu of Syria, Candia and Hejaz. In his latter days he sank into dotage.

Méhul (mā-ül'), ETIENNE HENRI, musical composer, born at Givet in 1763; died in 1817. He studied under Gluck; made his début as a composer at the Paris Opéra Comique with his opera *Euphrosine and Corradin* (1790), and followed up his success with *Irato*, *Joseph*, and other operas to the number of forty-two. Méhul gained considerable fame by his musical setting of Chenier's patriotic songs, *le Chant du Départ*, etc., and other pieces popular during the revolution.

Meiningen (mī'ning-en), a town in Germany, capital of the duchy of Saxe-Meiningen, in a narrow and picturesque valley, on the Werra, 40 miles S. S. E. of Erfurt. The castle of the duke contains a picture gallery, cabinet of coins, public and private library, etc. The theater has attained some fame for its excellent companies. Pop. (1905) 15,989.

Meissen (mī'sen), an ancient town of Saxony, founded by Henry I, in 922-933, 14 miles W. N. W. of Dresden, at the influx of the Triebisch into the Elbe. On a height above the town stand a noble Gothic cathedral, founded in the thirteenth century, and an extensive castle in the late Gothic style, belonging to the fifteenth century, recently restored and decorated with frescoes. Porcelain (in the royal porcelain factory near the town) is the staple manufacture. Meissen is the see of an archbishop. Pop. (1905) 32,336.

Meissonier (mā-son-yā), JEAN LOUIS ERNEST, a French painter, born in Lyons in 1815; went to Paris in 1830; first picture exhibited, *The Visitors*, 1834. He first became known as an illustrator of books, but rapidly became famous for the singular perfection of his

J. L. E. Meissonier.

art. His pictures, which, whether in genre or in portraiture, are almost without exception upon a small scale, are characterized by great minuteness of execution and high finish, but are at the same time not less remarkable for their excellence in composition and breadth of treatment. They have the force of appeal of large works. The greater number of them are groups of figures (chiefly of the seventeenth and eighteenth centuries) in conversation, single quiescent figures, and battle scenes or military subjects. Great accuracy of draughtsmanship, keen observation, and the sharp accentuation of the important note in the picture distinguish all his works. Among his pictures, which possess an astonishing market value, may be mentioned, *The Smoker* (1839); *La Partie des Boules* (1848); *Napoleon III at Solferino* (1864); the *Cavalry Charge* (1867), sold for 150,000 francs; the picture entitled *1807* (1875), one of his largest works, representing Napoleon I in the battle of Friedland, sold for 300,000 francs; *Jena* (1889). He died in 1891.

Mekong (mā'kong), MEKHONG, or CAMBODIA, the longest of all the Indo-Chinese rivers, rises in East Tibet, flows through part of China, Siam, Cambodia and French Cochin-China, and enters the Chinese Sea by several mouths; length estimated at 2700 miles. It is of comparatively little use for inland navigation, its channel being obstructed by rapids, but steamers have ascended it to lat. 14° N.

Mekran (mek-rän'), a maritime district of Southern Asia, forming part of Persia and of Beluchistan. It is mostly arid and barren, but there are fertile tracts along the river valleys yielding excellent dates.

Mela (mē'lä), POMPONIUS, a Roman geographer who flourished during the first century after Christ, and is the author of a treatise, *De Situ Orbis*, containing a concise view of the state of the world as known to the Romans.

Melaleuca. See *Cajeput*.

Melancholia, MELANCHOLY. See *Insanity*.

Melanchthon (me-langk'thon; Ger. (me-langk'ton), PHILIP, a German reformer, born at Bretten, in the Palatinate, in 1497; died at Wittenberg in 1560. His father was an armorer, and his original German name was Schwarzerd, which he Grecized into Melanchthon, or Melanthon. Both names denote 'black earth.' After having studied at Pforzheim he removed to Heidelberg University, where he took his bachelor's degree, and afterwards to Tübingen University, where he attained the degree of master, and became a lecturer. In 1518, at the instigation of Luther and Reuchlin, he was invited by Frederick, elector of Saxony, to fill the chair of Greek in the recently founded University of Wittenberg. In 1519 he accompanied Luther to Leipzig, in order to dispute with Dr. Eck, and in 1521 he published his famous *Loci Communes*, an exposition of Protestant dogmatics, which ran through some sixty editions in his lifetime, and was followed by other influential writings, such as the *Epitome Doctrinæ Christianæ* (1524). There is no doubt that many of the plans carried out by the reformers were the result of Melanchthon's wise suggestions. His Greek scholarship was also of inestimable advantage to Luther in his work of translating the Bible. In 1530 Melanchthon was appointed to draw up the general *Confession* which was presented to the emperor at Augsburg (hence known as the *Augsburg Confession*, which see), and he also wrote the *Apology* for it. Before Luther's death, in 1546, a certain difference of view developed itself between the two reformers, and after that event Melanchthon lost in some measure the confidence of a section of the Protestants and was involved in painful controversies, being accused by one party of a too great leaning to Calvinism, by another of a similar leaning to Catholicism.

Melanesia (mel-a-nē'shē-a), a group of islands stretching from the northeast of New Guinea to the tropic of Capricorn, and including New Britain Archipelago (with the Admiralty Islands), Solomon Islands Queen Charlotte or Santa Cruz Islands, New Hebrides, New Caledonia, Loyalty Islands and the Fiji Islands.

Melanism (mel'an-izm), the condition of abnormal blackness, or a tendency to blackness, in the hair or plumage of animals. It is the opposite of albinism, or whiteness. Black squirrels, leopards, etc., are examples.

Melanite (mel'an-it), a lime-iron variety of garnet, of a velvet black or grayish black, occurring always in crystals of a dodecahedral form. See *Garnet*.

Melanorrhœa (mel-an-o-rē'a), a genus of very large Indian trees, belonging to the nat. order Anacardiaceæ. It includes *M. usitatissima*, or black varnish tree—which yields when tapped a varnish much valued for lacquering.

Melanthaceæ (mel-an-thā'se-ē), a nat. order of poisonous endogens, consisting of bulbous, tuberous, and fibrous rooted plants, with or without stems, and having parallel-veined leaves. There are about 130 species, natives of all parts of the world, some of which resemble crocuses and some small lilies. The most important species are medical plants, as colchicum, white hellebore.

Melaphyre (mel'a-fīr), a compact black or blackish-gray igneous rock, consisting of a matrix of labradorite and augite, in which are embedded crystals of the same minerals, and sometimes uniaxial mica, hornblende and iron pyrites. It is essentially a basalt.

Melba (mel'ba), MME. *née* NELLIE MITCHELL), Australian operatic soprano, born in Melbourne, capital of Victoria, Australia, in 1861. Her mother was of Spanish descent; her father, Scotch. She was educated at the Presbyterian Ladies' College, Melbourne, and studied in Paris under Mme. Marchesi. She made her operatic début in *Rigoletto* at Brussels in 1887 and appeared in *Lucia* in New York in 1893. She was a favorite on the concert stage. In 1918 she was made a Dame Commander of the Order of the British Empire.

Melbourne (mel'burn), a city in the Commonwealth of Australia, capital of Victoria, on the Yarra-Yarra, about 2½ miles (6¾ miles by water) from Port Philip Bay, upon which are the ports of Sandridge, or Port Melbourne and Williamstown, possessing large and commodious piers; while Hob-

son's Bay (the northern extension of Port Phillip Bay) and Port Phillip Bay itself affords unlimited anchorage for the largest vessels. Melbourne was founded in 1836 during the premiership of Lord Melbourne, after whom it was named. It was incorporated in August, 1842, and in 1849 erected into an episcopal see. The city and its suburbs occupy an extensive area, which is mostly hilly or undulating, with the Yarra winding through it, the city proper, on the north bank of the Yarra, being the central and most important business part of the whole. Here the principal streets are about a mile long and 99 feet wide, and run at right angles to one another, being lined with handsome and substantial edifices. Beyond the city proper are the far more extensive suburbs, such as Collingswood, North Melbourne, Fitzroy, Carlton, Brunswick, Prahran, Richmond, Hawthorn, St. Kilda, Kew, South Yarra, etc. The public buildings of Melbourne as a whole are handsome and substantial, and quite on a par with those of cities of like size in Europe. Among them the most remarkable are the houses of parliament, the treasury, the law courts, the free library, containing over 110,000 volumes; the mint, a very handsome quadrangle; the university, with an admirable museum attached; the Ormond Presbyterian college; the town hall, capable of seating 4000 persons; the post-office; the exchange; the athenæum; the theaters; the Anglican and Roman Catholic cathedrals and numerous churches, etc. There are several public parks, a finely laid-out botanical garden, and a splendid race course. There is access to the center of the city for vessels of considerable size by means of the river Yarra, the navigation of which has recently been much improved. The shipping trade is large, both in exports and imports, the chief of the former being wool, of the latter manufactured goods. Most imports are subject to a heavy duty. By its railway systems Melbourne is connected with all the principal towns of the Australian continent. The chief industrial products are leather, clothing, furniture, flour, ales, cigars, ironware, woolens, etc. The Australian centenary was commemorated at Melbourne in 1888 by an international exhibition. Here the first federal parliament was inaugurated by George V, then Prince of Wales, in 1901, Melbourne being designated as the temporary capital of the new commonwealth, until the selection of a site for a permanent federal capital in New South Wales. Canberra is now the capital city, 429 miles from Melbourne. Pop. of Greater Melbourne 628,430.

Melbourne, William Lamb, viscount, an English statesman, born in 1779; died in 1848. Educated at Eton and Cambridge, he became a barrister, but relinquished the law and became member of parliament for Leominster. During the ministry of Canning he was secretary for Ireland; in 1830 he became home secretary in the Grey administration, and succeeded to the premiership when it was overthrown in 1834 on the Irish question. He continued to lead the Whig party with varying success until 1843, when he resigned and retired from public affairs. His political career is chiefly remarkable for the wise counsel and judgment with which he guided the young Queen Victoria on her accession in 1837.

Melchites (mel'kits), an Eastern body of Christians who, while adhering to the ceremonies and liturgy of the Greek Church, acknowledge the authority of the pope. The name is also given to such members of the Greek community as are Roman Catholics.

Melchizedek (mel-chis'e-dek), a personage mentioned in Gen., xiv, 18, as king of Salem and a priest of the most High God. Referred to again Ps., cx, 4, and Heb., v, vi, vii. As to his personality and character nothing is known.

Meleager (me-le-ä'ger), in Greek mythology, the son of

Œneus, king of Calydon. He distinguished himself in the Argonautic expedition and more particularly at the Calydonian hunt, killed the boar, and gave its skin as the highest token of regard to his beloved Atalanta.

Meleagris (me-le-ag'ris), the genus of birds to which the turkey belongs, type of the family Meleagridæ.

Melegnano (mel-e-nyä'nō). See *Marignano.*

Meles (mē'lēz), the genus to which the badger belongs.

Melfi (mel'fē), a town of Southern Italy, province of Basilicata, or Potenza, on a lofty volcanic height, 75 miles E. N. E. of Naples, surrounded by dilapidated walls. Its chief trade is in an excellent wine. Pop. 14,649.

Melia (mē'li-a), a small genus of trees, type of the nat. order Meliaceæ, natives of tropical Asia and Australia. *M. Azadirachta*, the neem tree or margosa, is a native of the East Indies. Its bark yields a bitter used as a tonic, its seeds yield a valuable oil, and its trunk a tenacious gum. *M. Azadarich*, sometimes called *Persian lilac, pride of India*, and *bead tree*, is a native of the north of India, now cultivated in the United States, as well as in southern Europe.

Meliaceæ (mel-i-ā'se-ē), a nat. order of polypetalous dicotyledons, distinguished by their stamens being united into a tube. See *Melia.*

Melilla (mā-lēl'ya), a rocky promontory on the north coast of Morocco, about 140 miles east of the Straits of Gibraltar, held by Spain since 1496, and now strongly fortified. In 1893 a conflict between the Spaniards and Riff-Moors around its defenses resulted disastrously to the latter.

Melilot (mel'i-lot; *Melilōtus*), a genus of leguminous plants, suborder Papilionaceæ, differing from the clovers in having racemose flowers. White Melilot has been recommended as a fodder plant under the names of *Cabul* and *Bokhara clover.*

Melinda (me-lin'da), a seaport of Eastern Africa, on the Zanzibar coast, formerly a place of importance.

Melinite (mel'i-nīt), an explosive prepared from picric acid and the solid residue from the evaporation of collodion.

Meliphagidæ (mel-i-fag'i-dē), the honey-eaters or honeysuckers, a family of birds which abound in all parts of Australia.

Melis'sa, Melitta, the genus of plants to which belongs *M. officinālis*, or common balm, used in medicine as a carminative stomachic and corrector of flatulence.

Mel'ita. See *Malta.*

Melkart (mel'kart), the national god of the ancient Phœnicians, a god of the sun.

Mellite, Mellilite (mel'īt), honeystone, a mineral of a honey-yellow or brownish color and resinous luster.

Melocca, Melucco (mel-ō'ka), a genus of plants of the nat. order Basellaceæ. *M. tuberosa*, a species of the genus, is cultivated in Peru, Bolivia and New Grenada, on account of its esculent tuberous roots.

Melocactus (mel-o-kak'tus), a genus of plants, nat. order Cactaceæ, characterized by the flowers being produced in a hemispherical or cylindrical head at the top of the plant. The plants themselves consist of simple fleshy stems of a globular or conical form, with numerous prominent ribs armed with fascicles of stiff spines placed at regular distances.

Melodrama (mel-u-drä'ma), originally and strictly, that species of drama in which the declamation of certain passages is interrupted by music, but now the term has come to designate a romantic play, generally of a serious character, in which effect is sought by startling incidents, striking situations, and exaggerated sentiment, aided often by splendid decoration and music.

Melody (mel-u-di), in the most general sense of the word any successive connection or series of tones; in a narrower sense, a series of tones which please the ear by their succession and variety; and in a still narrower sense, the particular air or tune of a musical piece.

Meloe (mel'o-e), a genus of beetles belonging to the family Cantharidæ; otherwise called oil-beetles.

Melon (mel'un; *Cucūmis Melo*), a well known plant and fruit of the nat. order Cucurbitaceæ or gourds. It is an herbaceous, succulent, climbing or trailing annual, cultivated for its fruit in hot eastern countries from time immemorial. There are many varieties, as the Cantaloupe, which is reckoned the best, the Egyptian, Salonica, and Persian melons, etc. The watermelon (*C. Citrullus*) is much cultivated in the warmer parts of the world on account of its refreshing juice, which, however, is less sweet than that of the common melon. The musk-melon is a variety of *Cucūmis Melo.*

Melos (mē'lōs), now MILOS or MILO, an island belonging to Greece, in the Grecian Archipelago, in the southeast of the Gulf of Ægina, one of the Cyclades; area, 64 sq. miles. Pop. 12,774. In

Melon (*Cucumis Melo*).

1820 a peasant discovered here the celebrated statue known as the Venus of Milo, now placed in the museum of the Louvre at Paris.

Melpomene (mel-pom'e-nē), the muse who presides over tragedy, daughter of Zeus and Mnemosyne. She is generally represented as a young woman, with vine leaves surrounding her head, and holding in her hand a tragic mask.

Melrose (mel'rōz), a town of Scotland, in the county of Roxburgh, 31 miles S. S. E. of Edinburgh. Its celebrated abbey was founded by King David in 1136; destroyed by Edward II in 1322; rebuilt by Bruce in 1326, and partly demolished by the English in 1545. Pop. 2195.

Melrose, a city of Middlesex Co., Massachusetts, 7 miles N. of Boston. It has manufacturers of boots and shoes and a large rubber-shoe factory. Pop. 15,715.

Melting-point. See *Fusing-point.*

Melton-Mowbray (mel'tun mō'brā), a town of England, county of and 14 miles northeast of the town of Leicester, on the Eye or Wreak. It has a considerable trade in pork pies and Stilton cheese. Pop. (1911) 9203.

Melun (mē-lŭn), a town of France, capital of the department of Seine-et-Marne, 27 miles southeast of Paris. It is regularly built, and has handsome quays and fine promenades. Pop. (1906) 11,219.

Melville (mel'vil), ANDREW, a Scottish reformer, born near Montrose in 1545; died at Sedan in 1622. He was educated at St. Andrew's; studied at the University of Paris, 1564-66; became a professor at Poitiers, and afterwards at Geneva: returned to Scotland in 1574, where he was appointed successively principal of Glasgow and of St. Andrew's universities. In 1582 he presented a petition to King James against the undue interference of the court in ecclesiastical affairs, for which he only escaped imprisonment by going into England. Returning in 1585 he resumed his duties at St. Andrew's, and became moderator of the General Assembly in 1587, 1589, 1594. In 1606 he was summoned to London by the king to confer on church matters, but because of his outspokenness he was committed to the Tower, and there remained until 1611. He then retired to France, and became professor in the University of Sedan.

Melville, GEORGE WALLACE, naval officer, born at New York in 1841. He entered the United States navy in 1861, rising through the various grades to that of chief of the Bureau of Steam Engineering. He engaged in Arctic discovery as a member of the *Jeannette* expedition of 1878, and the Hall and Greely relief expeditions, and headed the expedition which recovered the remains of the *Jeannette* party. He was appointed rear-admiral in 1899, retired in 1903, and then became engaged as an engineer in Philadelphia, where he invented an important method of gearing the turbine engine as to reduce the speed of the propeller. He died March 17, 1912.

Melville, VISCOUNT. See *Dundas.*

Melville Island. 1. An island in the Polar Sea, north of America. Captain Parry discovered it, and passed the winter of 1819-20 there.—2. An island off the north coast of Australia; area, about 1800 square miles.

Membrane (mem'brān), in anatomy, a texture of the animal body, arranged in the form of laminæ, which covers organs, lines the interior of cavities, or takes part in the formation of the walls of canals or tubes. Membrane is generally divided into three kinds, mucous, serous, and fibrous. The lining of the nose, trachea, œsophagus, stomach, intestines, is of the first kind; the serous membranes form the lining of the sacs or closed cavities, as of the chest, abdomen, etc.; the fibrous membranes are

tough, inelastic, and tendinous, such as the dura mater, the pericardium and the capsules of joints.

Memel (mā'mel), a Baltic seaport in Prussia, at the north end of and near the entrance to the Kurisches Haff, 75 miles northeast of Königsberg. It has various manufacturing and other industries, but the great source of its prosperity is its trade, which is very extensive, and consists chiefly of timber, corn, flax, hemp, potash, linseed and colonial produce. Pop. (1905) 20,651.

Memling (mem'ling), or MEMLING, HANS, a distinguished Flemish painter, born probably about 1430; died probably in 1495. He lived at Bruges, of which town he was a prosperous citizen, but little is known of his life. He was especially famous as a religious painter, and his works display a singular tenderness, ideality, and elevation. They are generally extremely well preserved.

Memmingen (mem'ing-en), a town of Bavaria, on the Aach, 41 miles southwest of Augsburg. Pop. (1905) 11,618.

Memnon (mem'non), a mythological personage mentioned in the Homeric poems as the beautiful son of Eōs (the morning), and in the post-Homeric accounts as the son of Tithōnus and nephew of Priam, whom he assisted at the siege of Troy. He slew Antilochus, but was himself slain by Achilles. His mother was filled with grief at his death, which Zeus endeavored to soothe by making her son immortal. The name of Memnon was afterwards connected with Egypt, where it was given to a statue still standing at Thebes, being one of two known from their size as 'the Colossi.' This statue, known as 'the vocal Memnon,' was celebrated in antiquity as emitting a sound every morning at the rising of the sun—perhaps through the craft of the priests, though some think it was owing to expansion caused by heat. Both statues seem originally to have been about 70 feet high.

Memorial Day. See *Decoration Day.*

Memory (mem'u-ri), the power or the capacity of having what was once present to the senses or the understanding suggested again to the mind, accompanied by a distinct consciousness that it has formerly been present to it; or the faculty of the mind by which it retains the knowledge of past events, or ideas which are past. The word *memory* is not employed uniformly in the same precise sense, but it always expresses some modification of that faculty which enables us to treasure up and preserve for future use the knowledge which we acquire; a faculty which is obviously the great foundation of all intellectual improvement. The word *memory* is sometimes used to express a capacity of retaining knowledge, and sometimes a power of recalling it to our thoughts when we have occasion to apply it to use, the latter being more correctly called *recollection.* See *Mnemonics.*

Memphis (mem'fis), an ancient city of Egypt, on the left bank of the Nile, some 20 miles south of Cairo, said to have been founded by Menes, the first king of Egypt. It was a large, rich and splendid city, and after the fall of Thebes became the capital of Egypt. At the time of the conquest of Egypt by Cambyses (524 B.C.) it was the chief commercial center of the country, and was connected by canals with the Lakes of Moeris and Mareotis. With the rise of Alexandria the importance of Memphis declined, and it was finally destroyed by the Arabs in the seventh century. The pyramids of Sakkara and the colossal statue of Rameses II, now mutilated and thrown down, are the chief objects of antiquarian interest on the site.

Memphis, a city and port of Tennessee, capital of Shelby Co., on the Mississippi, just below the junction of Wolf River, 209 miles W. S. W. of Nashville. It stands upon a bluff about 30 feet above the river in its highest floods, and is fronted by a fine esplanade. Its rapid growth is due to its favorable position for trade, which is largely carried on by rail and river, chiefly in cotton. The river is here deep enough to float the largest vessels and the shipping trade is very large, this city being the leading interior cotton mart of the United States, also a large producer of cottonseed-oil and oil products. It is also a large lumber market and has extensive manufactures. The river here is crossed by a magnificent iron railroad bridge. The city has various interesting institutions, educational and others. Pop. 131,105.

Menado (mā-nä'dō), the capital of a Dutch residency of same name in the northeast peninsula of Celebes. The town itself has a population of about 6000, while the inhabitants of the whole territory number about 500,000.

Ménage (mā-näsh'), GILLES, a French man of letters, born in 1613 at Angers; died in 1692. After finishing his early studies he was admitted as an advocate, but, disgusted with that profession, he entered the church, and through the favor of Cardinal de Retz and Mazarin obtained several benefices. From this time he dedicated himself solely to lit-

erary pursuits. His principal works are *Dictionnaire Etymologique, ou Origines de la Langue Française; Origines de la Langue Italienne; Miscellanea*, a collection of pieces in prose and verse.

Menai Strait (men'ā), a strait about ½ mile across, between the island of Anglesea and the coast of Wales. For the bridges over it see *Bridge*.

Menam (mā-nām'), the chief river of Siam, rising in the Laos country, and flowing generally southward to enter the Gulf of Siam below Bangkok; length, about 900 miles.

Menander (me-nan'dēr), a Greek writer of the new comedy, born at Athens in 324 B.C; died in B.C. 291. He was the pupil of Theophrastus, an intimate friend of Epicurus, and wrote comedies to the number of 100, of which only a few fragments remain. Terence's comedies were adapted from Menander.

Mencius (men'shi-us), the Latinized name of Meng-tse, a Chinese teacher, who was born about 370 B.C., and died about 288 B.C. He was educated by his mother with such success that the approbation contained in the phrase 'the mother of Meng' has become proverbial. Mencius was one of the greatest of the early Confucians.

Men'daites. See *Christians of St. John*.

Menasha (mē-nash'ā), a city of Winnebago Co., Wisconsin, at the north end of Winnebago Lake, and on the government canal, 98 miles N. N. W. of Milwaukee. There is here abundant water-power, utilized in the manufacture of iron and wooden wares, paper, woolen goods and flour, also in tanneries, pulley works, etc. Pop. 6081.

Mendeleeff (men'de-le-ef), DMITRI IVANOVICH, a distinguished Russian chemist; born at Tobolsk in 1834; died in 1907. He became professor of chemistry in the University of St. Petersburg in 1866. Of his many discoveries the most notable is his periodic law of atomic weights, one of the leading modern chemical theories.

Mendelssohn (men'delz-zōn), MOSES, a German philosopher, born of Jewish parents in 1729; died in 1786. He studied hard under adverse circumstances to acquire a knowledge of Jewish and modern literature; became bookkeeper to a Jewish silk manufacturer and tutor to his family. In 1754 he formed a friendship with Lessing, who made him the hero of his *Nathan the Wise*, while he in turn defended his friend from the attacks of Jacobi, who accused Lessing of being a Spinozist. The chief works of Mendelssohn are a treatise on metaphys' *Phædon*, a dialogue on immortality (1767); *Jerusalem* (1783); and *Morgenstunden* (1785).

Mendelssohn-Bartholdy (men'delz-sōn bar-tol'dē), FELIX, distinguished composer, born at Hamburg in 1809; died at Leipzig in 1847. He was the son of a wealthy Jew, who, recognizing his son's talent for music, had him carefully trained. In his ninth year he publicly appeared in Berlin as a musician, and in his sixteenth year he produced the well-known overture to the *Midsummer Night's Dream*. In 1829 he began an extensive tour through England, Scotland, France, Italy, and on his return to Germany he became musical director in Düsseldorf. Here he tried to establish a theater, but without success; and when he left that city in 1835 he became conductor of the famous concerts in the Gewandhaus of Leipzig—a position which he maintained with several slight interruptions until his death. In 1841 he was appointed musical director to the King of Saxony; was afterwards summoned to Berlin by the King of Prussia to become director of music at the Academy of Arts; and journeyed repeatedly to England, where he conducted his own music at London and Birmingham. Of his musical compositions the best known are the oratorios *Elijah* and *St. Paul;* the overture to *Ruy Blas;* and his *Songs Without Words*. He left unfinished the oratorio of *Christus* and the opera of *Lorlei*.

Mendès (men-dez), CATULLE, a French poet, born at Bordeaux in 1840. His lyrical drama, *Le Roman d'une Nuit*, led to his imprisonment. Other notable poems are *Hesperus* and *Le Soleil de Minuit*. He wrote several novels and plays, the latter including *Le Capitaine Fracasse*, *Le Chatiment* and *Fiamette*. He died in 1909.

Mendicant Orders. See *Orders (Religious)*.

Mendip Hills (men'dip), a range of hills in England, in Somersetshire, attaining an altitude of 1067 feet.

Mendoza (men-dō'tha), DON DIEGO HURTADO DE, a Spanish author, general and politician, born in 1503; died in 1575. He wrote an account of the Moorish insurrection in the Alpujarras Mountains, but is best known by his comic romance, the *Life of Lazarillo de Tormes*, the first of a class of novels descriptive of the life of clever rogues.

Mendoza, a province of the Argentine Republic, on the eastern side of the Andes; area, about 54,000 sq.

miles. The country is volcanic, the soil fertile but requiring irrigation; chief products, corn, wine and fruits. Pop. 141,431.—The capital, which has the same name, is situated about 2891 feet above the sea at the foot of the Cordilleras. It was almost totally destroyed by an earthquake in 1831, over 13,000 lives being lost, but has been rebuilt, and has now about 60,000 inhabitants.

Menelaus (men-e-lā'us), in Greek mythology, son of Atreus, brother of Agamemnon, and husband of the beauteous Helen, with whom he received the kingdom of Sparta or Lacedæmon. His wife having been abducted by Paris, son of Priam, king of Troy, he summoned the Greek princes to avenge the affront, and himself led sixty ships to the siege of Troy. After its conquest he returned with Helen to his native land in a devious voyage which led him to Cypria, Phœnicia, Egypt and Libya during a period of eight years.

Menelik II (men'e-lik), King of Abyssinia, was born in 1843, and succeeded John II in 1889. During his reign he defeated the Italian invaders of his country and welcomed civilizing influences. He died in 1913.

Menes (me'nēz), or MENA, according to Egyptian traditions, the first king of Egypt. See *Egypt*.

Mengs (mengz), ANTON RAFAEL, historical painter, born in 1728; died in 1779. He was the son of a Danish artist settled in Dresden, by whom he was trained in art, and taken to Rome, where he studied the works of Michael Angelo and Raphael. On his return to Dresden the king appointed him principal court painter. He painted also at Rome, and at the court of Charles III of Spain. In 1773 he executed at Rome the *Apotheosis of Trajan* in fresco, his finest work.

Menhaden (men-hā'den), an American salt-water fish (*Alōsa menhāden*). It belongs to the family Clupeidæ, or herrings. It yields quantities of oil, the refuse being used as manure. It is also preserved in the same way as the sardine. Menhaden fishing has done almost irreparable damage to all other kinds of fishing—especially the game food fishes along the Jersey coast—by depriving them of one of their chief supplies of food. It is carried on from Maine to Florida.

Meningitis (men-in-jī'tis), the term applied to inflammation of the two inner membranes (*meninges*) which envelop the brain—the *arachnoid membrane* and the *pia mater*. There are two forms of this disease, called *simple* and *tubercular*. The former may be caused by injuries of the head, exposure to cold or heat, disease of the ear, etc., and the symptoms are pain in the head, giddiness, feverishness, and often vomiting; while the latter is frequently due to a scrofulous taint, and is also called *acute hydrocephalus*, or water in the head.

Menis'cus. See *Lens*.

Menispermaceæ (men-i-spēr-mā'se-ē), an extensive nat. order of exogenous plants, consisting of twining, often scrambling and slender, shrubby plants, with alternate leaves without stipules, and small greenish or white unisexual flowers. They are common in the tropical parts of Asia and America, and are usually bitter and tonic plants, the seeds of some of them having narcotic properties. One species yields cocculus indicus.

Menno (men'ō), SIMONS, the founder of the sect known as the Mennonites, was born in Friesland in 1496; died in 1561. He was educated for the church and became a Roman Catholic priest; but about 1530 he joined the Anabaptists. After the suppression of the disturbances at Münster Menno collected the scattered remnants of the sect, inculcated in them more moderate views, and for many years in Holland and the north of Germany, as far as Livonia, labored to increase the number of his followers, and to disseminate his doctrines. There are a number of congregations in Holland, Germany and Russia. These do not believe in original sin, and object to taking oaths, making war, or going to law. The Mennonites in the United States number about 55,000.

Menobranchus (men-o-bran'kus), a genus of tailed amphibians, allied in structure to the eft or newt, found in lakes and streams of North America.

Menominee (mē-nom'o-nē), a city, county seat of Menominee County, Michigan, on Green Bay at the mouth of the Menominee River, at the extreme southwestern point of the Northern Peninsula. Menominee was at one time the largest lumber-shipping center in the world, but to-day it is supported largely by manufacturing, agricultural interests and wholesale business. Pop. 13,000.

Menomonie (mē-nom'o-nē), a city, capital of Dunn Co., Wisconsin, 25 miles W. by N. of Eau Claire, on Red Cedar River. Has brick yards, flour and barley mills, and a shipping trade in cattle, hogs, sheep and mill products. Pop. 5093.

Menopome (men'o-pōm), MENOPO'MA, a tailed amphibian (*Menopoma alleganiense*), peculiar to the fresh waters of North America, which seems to form a connecting link between the perennibranchiate amphibians and the salamander.

Menschikoff (men'shi-kof), ALEXANDER DANILOVITCH, a Russian minister, born at Moscow in 1672; died in 1729. He was born in humble life, but ultimately became a prince of the empire and first favorite with Peter the Great. When that monarch died his power, under Catherine I, was greatly increased. After two years she was succeeded by her grandson, Peter II, who came under the guardianship of Menschikoff, and to whom he endeavored to marry his daughter. His designs, however, were frustrated by the combined efforts of the Dolgorukis and the young czar, and Menschikoff was exiled to Siberia, where he died.—ALEXANDER SERGIEVICH MENSCHIKOFF, great-grandson of the above, born in 1787; died in 1869; was both a general and a diplomatist, and in 1854 was made commander-in-chief during the Crimean war. He suffered defeat at the Alma and Inkerman; defended Sebastopol, but after its fall and the death of Nicholas he was recalled from the army, and died in retirement.

Menstruation (men-strō-a'shun), or MENSES, the periodical discharge of blood from the generative organs of the human female. The period at which menstruation begins is usually between the 14th and 16th year; it recurs at monthly intervals, lasting for four to six days, and thus continues until from the 45th to the 50th year; the discharge at each period is from 6 to 8 oz. All these conditions, however, vary with each individual. A discontinuance of this discharge is one of the first signs of conception, and the cessation usually continues during the period of pregnancy and lactation.

Mensuration (men-sū-rā'shun) is the practical application of the simpler processes of mathematics to the measurement of the area of a plane figure, or the volume of a solid, the result being expressed in square or cubic inches, feet, yards, etc. The area of any plane rectilineal figure is easily found, since it can always be divided into a certain number of triangles, and the area of every triangle is equal to the base multiplied by half the perpendicular height. If the figure is a parallelogram its area is equal to any side multiplied by the perpendicular distance from this side to the opposite; if a trapezium it is equal to half the sum of two opposite sides multiplied by the perpendicular distance between them. Circumference of a circle = diameter multiplied by 3.14159. Area of a circle = square of radius multiplied by 3.14159 = radius multiplied by half circumference. Volume of any rectangular solid = length, breadth and depth multiplied together.

Mental Derangement. See *Insanity.*

Mental Philosophy. See *Mind, Metaphysics, Psychology.*

Mentana (men-tä'nä), a village in Italy, province of Rome, near Tivoli, where Garibaldi met with a defeat in 1867.

Mentha (men'tha) the mint genus of plants. See *Mint.*

Menthol (men'thol), a white crystalline substance obtained from oil of peppermint, of which it smells strongly, used externally in case of nervous headache.

Mentone, in French MENTON (mäṅ-ton), a town in the French department Alpes-Maritimes, situated on the Mediterranean, divided into the old part, perched upon a steep hill, and the new quarter, along the shore. The climate is mild and equable, and the town has become a favorite winter health resort. Pop. 9944.

Mentor (men'tor), the faithful friend of Ulysses, who entrusted to him the care of his domestic affairs during his absence in the war against Troy. The education of the young Telemachus fell to his charge and the wise and prudent counsel which he gave the youth has given to his name its metaphorical significance.

Mentz. See *Mains.*

Menu. See *Manu.*

Menura (men-ū'ra), a genus of insessorial birds inhabiting Australia, of which the only species known is the lyre-bird (*M. superba* or *paradisea.*) See *Lyre-bird.*

Menzaleh (men-zä'leh), a lake or lagoon in Egypt, running parallel with the Mediterranean, from which it is divided by a low-lying slip of land, from 2 to 12 miles in breadth. It receives the Pelusiac and Tantic branches of the Nile, and communicates with the sea by three openings. The Suez Canal runs along its eastern extremity.

Mephistopheles (me-fis-to f'e-les), older forms, MEPHISTOPHILUS, MEPHISTOPHILIS, the

name of a demon in the old puppet-plays, adopted and developed by Marlowe in his tragical history of Dr. Faustus; and more especially by Goethe in the first part of Faust, where he becomes the cultured personification of evil rather than the Satan of popular belief.

Meppel (mep'el), a town of Holland, province of Drenthe, with manufactures of linen and cotton fabrics, etc. Pop. 10,470.

Mequinez (mek'i-nes), a city of Morocco, 35 miles W. of Fez. It is surrounded by a dilapidated wall, and contains a handsome palace, a summer residence of the emperors of Morocco.

Meran (me-rän'), a town of Austria in the Tyrol, on the Passer near its junction with the Adije, a favorite winter health resort. Pop. 9284.

Mercantile Agency. A system by which the financial standing of business firms is gauged as accurately as possible for the benefit of those with whom they deal. Quarterly commercial ratings of all houses of any standing in all lines of business are issued as a guide to those from whom they may seek credit. Special ratings are also furnished and these agencies are a sort of clearing house for credit in the business world.

Mercantile Law. See *Commercial Law.*

Mercator (mêr-kā'tur), GERARD, geographer, born at Rupelmonde, in Flanders, in 1512; died in 1594. He studied at Louvain; became a lecturer on geography and astronomy; entered into the service of Charles V, for whom he made a celestial and a terrestrial globe; and in 1559 he retired to Duisburg as cosmographer to the Duke of Juliers. He is the author of a method of projection called by his name (see next article), the principles of which were applied practically by Edward Wright in 1599. He is also the author of *Tabulæ Geographicæ* (Cologne, 1578).

Mercator's Projection, a method of projection used in map-making in which the meridians and parallels of latitude cut each other at right angles, and are both represented by straight lines. By means of this projection seamen are enabled to steer by compass in straight lines, and not in the spiral necessitated by the other projections.

Mercer (mer'sêr), M. E., a Canadian army officer, commander of the 3d Canadian division in the European war, 1914-18. He was killed in action near Ypres in the European war (q. v.), June 2, 1916.

Mercia (mer'si-a), the largest of the Anglo-Saxon kingdoms, founded in 585; conquered by Egbert 827.

Mercier (mär'syā'), DESIRÉ, a Belgian cardinal (1851-), born near Waterloo. In 1907 he became Archbishop of Malines and was elevated to the cardinalate. During the German invasion of Belgium, 1914-18, he played a hero's part. He visited America in 1919.

Mercier, HONORÉ, a Canadian lawyer and statesman (1840–94) who wielded great influence in French Canada. He was premier of Quebec in 1887.

Mercury (mer'kū-ri), in mythology, the name of a Roman divinity, identified in later times with the Greek Hermês. As representing Hermês he was regarded as the son of Jupiter and Maia, and was looked upon as the god of eloquence, of commerce and of robbers. He was also the messenger, herald, and ambassador of Jupiter. As a Roman divinity he was merely the patron of commerce and gain. See *Hermês.*

Mercury, in astronomy, the planet nearest the sun. It moves round the sun in 87.9693 of our mean solar days, at a mean distance of 35,392,000 miles; its eccentricity of orbit is 0.205618; the inclination of its orbit to the ecliptic is 70° 0′ 8.2″; its diameter about 3050 miles. The period of its axial rotation is unknown. Its volume is about $\frac{1}{17}$ that of the earth; its density $\frac{1}{10}$ greater than the earth's. It is visible to the naked eye in spring and autumn after sunset and before sunrise. Transits of mercury over the sun's disc take place at intervals of 13, 7, 10, 3, 10, 3, etc., years.

Mercury, called also quicksilver, a metal whose specific gravity is greater than that of any other metal, except platinum, gold and tungsten, being 13.56, or thirteen and a half times heavier than water. It is the only metal which is liquid at common temperatures. It freezes at a temperature of 39° or 40° below the zero of Fahrenheit, that is, at a temperature of 71° or 72° below the freezing point of water. Under a heat of 660° it rises in fumes, and is gradually converted into a red oxide. Mercury is used in barometers to ascertain the weight of the atmosphere, and in thermometers to determine the temperature of the air, for which purpose it is well adapted by its expansibility, and the extensive range between its freezing and boiling points. Preparations of this metal are among the most powerful poisons, and are extensively used as medicines. The preparation called calo-

mel or mercurous chloride ($HgCl$) is a most efficacious deobstruent. Another valuable preparation is corrosive or mercuric chloride ($HgCl_2$). From the fluid state in which mercury exists it readily combines with most of the metals, to which, if in sufficient quantity, it imparts a degree of fusibility or softness. An alloy of mercury and any other metal is termed an *amalgam*, amalgams being largely employed in the processes of silvering and gilding. Mercury is chiefly found in the state of sulphide, but it is also found native. The chief mines of mercury are in Spain, but it is also found in Germany, Italy, China, California, Borneo, Mexico and Peru.

Mercy, Sisters of, the name given to members of Roman Catholic religious communities of women, founded for the purpose of nursing the sick at their own homes, visiting prisoners, attending lying-in hospitals, superintending the education of females, and the performance of similar works of charity and mercy. Communities of Sisters of Mercy are now widely distributed over Europe and America. The Anglican Church also has an order of Sisters of Mercy.

Meredith (mér'e-dith), George, poet and novelist, born in 1828 in Hampshire; educated in Germany; studied for the law, but essayed a literary career with a volume of poems in 1851. Among those that followed are the *Shaving of Shagpat* (1855); *The Ordeal of Richard Feverel* (1859); *Evan Harrington* (1861); *Poems and Ballads* (1862); *Rhoda Fleming* (1865); *The Egoist* (1879); *Diana of the Crossways* (1885); *One of Our Conquerors* (1891); *Lord Ormont and His Aminta* (1894), etc. He died in 1909.

Merganser (mér-gan'sér), a genus of aquatic birds belonging to the duck family. The goosander (*Mergus Merganser*) forms the typical European species; that of the North American continent is the hooded merganser (*M. cucullatus*). They inhabit lakes and the sea coast, migrate southward in winter, lay from eight to fourteen eggs, and are gregarious in habit.

Red-breasted Merganser (*Mergus serrator*).

Mergenthaler (mer'gen-tä-lér), Ottmar, inventor, born at Würtemburg, Germany, in 1854; died in 1899. He came to the United States in boyhood and experimented for years in the invention of a type-setting machine. In 1886 he completed the linotype machine, an invention which has revolutionized the art of the printer, and very greatly decreased the cost of printed matter.

Mergui (mer-gē'), the principal town of the district of same name in British Burmah, on an island in the delta of the Tenasserim River, close to where it falls into the Bay of Bengal. The harbor is good, and the modern town occupies a low range of hills rising from the river. Pop. 11,987.

Mergui Archipelago (mer-gē'), a chain of islands in the Indian Ocean, off the coast of Tenasserim and Lower Siam, the more northern ones forming a part of the British district of Mergui. The inhabitants are industrious, but few in number.

Merida (mer'i-dä), a city of Spain, in the province and 30 miles east of Badajoz, on the right bank of the Guadiana, here spanned by a Roman bridge of eighty-one arches, built by Trajan. Other Roman remains are the arch of Santiago; the temple of Diana, now built into a dwelling-house; the theater, which is almost perfect; the amphitheater, the circus, the great aqueduct, etc. Merida was the capital of Lusitania for several centuries. Pop. (1910) 14,663.

Merida, the capital of Yucatan, in Mexico, is situated about 25 miles from the port of Progreso, on the Mexican Gulf, with which it is connected by a railway. It has a Moorish aspect generally, and contains a number of fine squares, a cathedral, bishop's palace, government house, etc. Merida was founded in 1542. It has various manufactures. Pop. (1910) 62,447.

Merida, a town of Venezuela, capital of a state of the same name, at the foot of the Sierra Nevada. It is a well-built place, with a university. Pop. 12,018.

Meriden (mer'iden), a city of New Haven County, Connecticut, 18 miles N. E. of New Haven. It is largely engaged in the manufacture of iron castings, tinware, cutlery, brasswork, glass, woolen goods, plated ware and other articles. The International Silver Company employs about 4000 men. It contains a State reformatory, the Curtis

Home for Orphans and Aged Women, and the Curtis Memorial Library. Pop. 32,066.

Meridian (mēr-id'i-an), one of the innumerable imaginary lines on the surface of the earth that may be conceived as passing through both poles and through any other given place, and serving to settle the longitude of places and thus to mark their exact position. There are also corresponding lines called *astronomical* or *celestial meridians*, which are imaginary circles of the celestial sphere passing through the poles of the heavens and the zenith of any place on the earth's surface. Every place on the globe has its meridian, and when the sun arrives at this line it is noon or mid-day, whence the name (Latin *meridianus*—*medius*, middle, and *dies*, day). The longitude of a place is its distance—usually stated in degrees, minutes and seconds—east or west of any meridian selected as a starting point, just as its latitude is the distance north or south of the equator. In Britain it has long been the custom to count from the meridian of Greenwich as a starting point; this meridian being called the first meridian, and the longitude of Greenwich being marked 0, or nothing. Other countries, however, had selected their own meridian, with the result that confusion arose among geographers and navigators in localising any given place. This difficulty was discussed at a national conference held at Washington, October, 1884, and at last Greenwich was selected as the geographical and astronomical reference meridian of the world, longitude to be reckoned east and west from this up to 180°. It was also arranged that the astronomical day should begin at midnight, January 1, 1885.

Meridian (mer-id'i-an), capital of Lauderdale County, Mississippi, 96 miles E. of Jackson, is an important railroad terminus, and the principal manufacturing center of the state, with railroad repair shops, foundries and machine shops, and manufactures of furniture, cotton oil, fertilizers, sash, blinds, etc. Here is the East Mississippi Female College and other institutions. Pop. 23,285.

Meridian Circle, a mural circle or transit circle.

Merimee (mā-rē-mā), PROSPER, a French poet and prose writer, born in 1803; died in 1870. He studied law and passed as advocate; but employed himself more with literature, and first came prominently forward in 1825 with eight comedies professedly translated from the Spanish of 'Clara Gazul.' He contributed to the *Revue de Paris* and the *Revue des Deux Mondes*; became inspector of historical monuments, in which capacity he traveled through France, and wrote several archæological works; continued to publish romantic tales, such as *Arsène Guillot*, *Carmen*, *Colomba*, etc.; was made a senator in 1853, grand officer of the Legion of Honor, 1866. Among his writings were *The History of Don Pedro I. of Castille* (1848); *Poetry of Modern Greece* (1855); *Lettres à une Inconnue* (1873); *Travels* in various parts of France, etc.

Merino (me-rē'nō), a twilled woolen tissue, dyed in various colors, and often also printed. In the better kind of goods both the warp and the woof are of carded woolen yarn, but in inferior sorts the warp is of cotton. The French fabrics are held in the highest estimation.

Merino Sheep, a variety of sheep originally peculiar to Spain, but now reared largely in other parts of Europe, in Australia, New Zealand, United States, etc. They are raised chiefly for the sake of their long fine wool, the mutton being but little esteemed.

Merioneth (mer-i-on'eth), or MERIONETHSHIRE, a maritime county in North Wales, bounded by Carnarvonshire, Denbighshire, Montgomeryshire, Cardiganshire, and by Cardigan Bay; area, 668 square miles. The coast line is broken and rugged; the surface of the county mountainous, the highest point being Aran Mowddwy (2970 feet). The principal minerals are lead, copper, and slates; in 1887 extensive gold-mining operations were begun in the Mawddach valley. The soil is for the most part poor, oats being the chief grain crop; cattle, sheep, and small hardy ponies are reared. Chief town, Dolgelly. Pop. (1911) 45,573.

Merivale (mēr'i-vāl), CHARLES, an English historian, born about 1805; was educated at Harrow, Haileybury and Cambridge, where he had a distinguished career. He was rector of Lawford, Essex, 1848-69, then became dean of Ely. He wrote *History of Rome*, *Early Church History*, *Boyle Lectures*, etc. He died in 1898.—HERMAN MERIVALE, his brother (1806-1894), was professor of political economy at Oxford, and permanent under-secretary of State for India; author of *Historical Studies*, etc. —His son, HERMAN CHARLES (born in 1839; died in 1906), was an active writer of plays, poems, etc., some of his plays being, *All for Her*, *The White Pilgrim* and *Forget Me Not*.

Merle. See *Blackbird.*

Merle d'Aubigne (merl dō-bēn-yā), JEAN HENRI, historian and theologian, born at Geneva, in 1794; died in 1872. His education, commenced at Geneva, was completed at Berlin. He became pastor at Hamburg to a French congregation; and removed afterwards to Brussels. Returning to his native city in 1830, he became professor of church history in the theological school founded by the Genevan Evangelical Society. Besides his well-known *History of the Reformation in the Sixteenth Century* (1835-53), he published a supplementary history to the time of Calvin (Paris, 1862-63); *The Protector* (Cromwell), 1847; and the *Recollections of a Swiss Minister.*

Merlin (mēr'lin), a legendary Welsh prophet and magician, who is claimed to have lived in the fifth century; to have been the offspring of a demon and a Welsh princess, and to have served as adviser to the English kings Vortigern, Ambrosius, Utherpendragon and Arthur. There was also a prophet connected with the ancient kingdom of Strathclyde called Merlin the Wild, or Merlinus Caledonius, who is said to have lived in the sixth century. His prophecies, containing also those ascribed to the Welsh Merlin, were published at Edinburgh in 1615.

Mermaid's-glove, a name given to the largest of British sponges (*Halichondria palmata*), from its tendency to branch into a form bearing a remote resemblance to a glove with extended fingers. It sometimes attains a height of 2 feet.

Meroe (mer'ō-ē), a city and State of ancient Ethiopia, in the northeastern part of Africa, corresponding mainly with the district between the Nile and Atbara, north of Abyssinia. Meroë was the center of the caravan trade between Ethiopia, Egypt, Arabia, Northern Africa and India. There are pyramids at the site of ancient Meroë and a small town of same name on the Nile.

Merops (mer'ops), the bee-eaters, a genus of birds forming the type of the family Meropidæ. See *Bee-eaters.*

Merovingians (mer-o-vin'ji-anz), the first dynasty of Frankish kings which ruled in the northern part of Gaul from 496 to 752, when they were supplanted by the Carlovingians.

Merrill, a city, county seat of Lincoln County, Wisconsin, on the Chicago, Milwaukee and St. Paul railroad. It is in a great timber district, and has large lumber boom and saw mills. Doors, sashes, blinds, shingles, etc., are largely manufactured. Pop. 9000.

Merrimac (mer'i-mak), a river of the United States in New Hampshire and Massachusetts. The immense water-power furnished by its falls has created the towns of Lowell and Lawrence in Massachusetts, and of Nashua and Manchester in New Hampshire.

Merrimac, the name of one of the earliest iron-clad warships, which took part in the memorable battle of the *Monitor* and *Merrimac*, in Hampton Roads in 1862. Originally a frigate of the United States navy, it was sunk in Norfolk harbor at the beginning of the Civil war, and subsequently raised by the Confederates and plated with bars of 8-inch cast-iron.

Merritt (mer'it), WESLEY, soldier, born in New York, in 1836; was graduated at West Point in 1860. He entered the Civil war, was a cavalry captain in 1862, and at Gettysburg commanded the Reserve Cavalry Brigade. In 1864 he commanded a division under Sheridan, being in every battle of that campaign. He served as superintendent of the United States Military Academy, 1882-87, was promoted major-general in 1895, and in 1898 was commander of the land forces in the Philippines, capturing Manila, August 13, with the aid of Admiral Dewey. He was retired on age limit in 1900, and died in 1910.

Mersey (mer'zi), an important river of England, has its origin in several streams which flow from the Pennine Moors and expands into an estuary 17 miles from its mouth at Runcorn, its entire length being 60 miles. The Manchester Ship Canal comprises part of the channel of the Mersey.

Merthyr-Tydvil (mer'ther tid'vil), or TYDFIL, a parliamentary borough of South Wales, county of Glamorgan, 24 miles N. N. W. of Cardiff, on the Taff. It has risen up from a mere village in 1780 to a place of great extent and importance, owing its prosperity to its situation near the center of the valuable coal and mineral field of South Wales. The shipping ports are Swansea and Cardic. Pop. 80,960.

Merv, an oasis in Central Asia, north of Afghanistan, the principal seat of the Teke-Turcomans, who from this center used to make predatory incursions into Persia and Afghanistan. In 1815 the oasis was subjugated by the Khan of Khiva, to whom it remained tributary for about twenty years. Sub-

sequently Persia attempted to make good the claims which it had long laid to this district, and in 186[illegible] fitted out an expedition for the purpose, which, however, miscarried completely. In 1881 General Skobeleff led a Russian expedition against the Teke-Turcomans, captured their stronghold of Geok Tepe, and received the submission of the people of Merv. The Russians, who are rapidly extending the area of cultivation by means of irrigation, maintain a body of troops here, and have made it the administrative center of the Penjdeh district, a small town having sprung up.

Mesa (mē'sa), an elevation with level surface, more [illegible] land of small extent rising abruptly [illegible] a surrounding plain, a term [illegible] used in that part [illegible] United States bordering on Mex[illegible]

Mescal Button (*Lophophora Williamsii*).

Mescal - Buttons (mes'kăl'-but'nz). The [illegible] tops of a [illegible] spineless turnip-shaped [illegible] growing in the [illegible] regions of Texas and Northern Mexico called locally *peyote*, *hikuli*, and *wokowi*. The plant rises but a short distance from the ground and has a flat top with a number of radiating convex ribs. The tops of the plants are collected by the Indians and dried, forming button-like masses about an inch in diameter and a quarter of an inch thick, which have narcotic properties. They are called *dry whisky* in Texas, and are either chewed dry or added to alcoholic drinks, producing a delirious intoxication somewhat resembling the effect of opium or of Indian hemp.

Mesembryan'themum. See *Ice-plant.*

Mesentery (mes'en-te-ri), a membrane in the cavity of the abdomen attached to the lumbar vertebræ posteriorly and to the intestines anteriorly. It is formed of a duplicature of the peritoneum, and contains adipose matter, lacteals, mesenteric glands, lymphatics and mesenteric arteries, veins and nerves. Its use is to retain the intestines in a proper position, to support vessels, etc.

Meshed (mesh-hed'), a town of northeastern Persia, capital of the province of Khorasan, 500 miles northeast of Ispahan. It contains the shrine of Imam Rusa, and is the sacred city of the great Mohammedan sect of the Shiites. The chief manufactures are velvets, sword blades, some silk and cotton goods, and turquoise jewelry. Its situation makes it an important entrepôt of trade. Pop. about 70,000.

Mesmer (mes'mer), FRIEDRICH ANTON, a German physician, founder of the doctrine of mesmerism or animal magnetism, was born in 1733; died in 1815. He professed to cure diseases by stroking with magnets, but about 1776 he renounced their use, and declared that his operations were conducted solely by means of the magnetism peculiar to animal bodies. (See *Mesmerism.*) He went to Paris in 17[illegible], where he achieved considerable success and fame and made many converts to his views, but was regarded by the medical faculty as a charlatan. The government at length appointed a committee of physicians and members of the Academy of Sciences to investigate his pretensions. The report was unfavorable, and the system fell for the time into disrepute. Mesmer retired to Suabia, where he died.

Mesmerism (mes'mer-izm), ANIMAL MAGNETISM (*electrobiology, hypnotism*), terms applied to certain peculiar nervous conditions which may be artificially induced, and in which the mind and body of one individual may be peculiarly influenced by another apparently independent of his own will. The term mesmerism is derived from Mesmer (see preceding article), who professed to produce these conditions in others and to cure diseases by the influence of a mysterious occult force residing in himself. This force he called animal magnetism. He held that it pervaded the whole universe, and specially affected the nervous system. The phenomena were known from the earliest stage, when the priests of most of the ancient civilizations affected to cure diseases by the touch of the hand, or threw people into deep sleeps, induced dreams, and produced many of the effects now referred to mesmerism. While the phenomena which Mesmer professed to produce were probably in many cases genuine, his theory of animal magnetism rested on no proper scientific basis. He has been followed by many disciples, whose success in producing the mesmeric condition has left no

doubt as to the reality of many of the phenomena of mesmerism; but modern scientific investigation, while not fully explaining all these, has shown that they are due to peculiar nervous conditions, and that it is unnecessary to presuppose any occult force to account for them. The means usually employed to produce the mesmeric condition are such as touching and stroking with the hands, according to rule (manipulation), breathing on the person, fixing the eyes on him, etc. It may also be produced by causing the patient to stare at an object, especially a bright one, placed in such a position as to strain the eye, the effect being completed by a few passes of the hand over the face without touching it. In the condition thus induced the patient seems to be in a kind of sleep. The limbs will remain in any position in which they may be placed. By stroking the surface of the body the muscles adjacent may be rendered rigid as in a person suffering from catalepsy. Reason and memory are temporarily suspended, the will is paralyzed and the subject is irresistibly impelled to act in accordance with suggestion, however absurd. He can be persuaded into any hallucination, such as that he is someone other than himself, or that he hears or sees, smells or tastes something which has no existence before him. As a therapeutic agent mesmerism has been successfully employed in diseases that have a nervous origin.

Many theories similar to that of Mesmer have been propounded to account for these phenomena, *e. g.*, that of the Baron von Reichenbach of the existence of an 'influence' developed by certain crystals, the human body, etc., existing throughout the universe, which he called *odyl;* that of electro-biology, which attributes them to electric currents of spiritualism and clairvoyance, which attribute them to spiritual influences. The first step towards scientific investigation of them was taken by James Braid, a surgeon in Manchester, who attempted a physiological explanation of them in a paper read before the British Association at Manchester in 1842, and in a work published in 1843 entitled *Neurypnology*. To him we owe the term hypnotism (Greek *hypnos*, sleep). Scientific investigation has since been devoted to the subject to a considerable extent, and much has been learned concerning it. The phenomena seem in many cases to be a result of suggestion, the ideas implanted in the minds of those under its influence being remarkably persistent, even when very inconsistent with the normal thoughts. The study of mesmerism is still being actively prosecuted.

Mesne (mēn), in law, middle or intervening. *Mesne process* is defined by Wharton as 'all those writs which intervene in the progress of a suit or action between its beginning and end, as contradistinguished from primary and final process.'

Mesopotamia (mes-ō-pō'tā-mi-a), a name given by the Greeks to the extensive region inclosed by the Tigris and Euphrates, anciently associated with the Assyrian and Babylonian monarchies, and densely peopled. Its Old Testament name is *Aram Naharaim*, or *Padan Aram*. The Greek title was probably not in use until after Alexander the Great invaded the East. This country is inhabited chiefly by Arabs, Kurds and Armenians, its population having very greatly decreased. Many of them are nomadic, and their chief occupation is the grazing of cattle. Mesopotamia is not a political division. The country is nominally divided among several Turkish villayets, though the tribes retain their independence. The region was included in the great German plan of a Middle Europe, which would stretch from the North Sea to the Persian Gulf. The Berlin-to-Bagdad railway was well on the way toward completion when the war broke out (1914), and an attempt was made to rally the Arab tribes to the support of the Teuton-Turkish cause. The capture of a British expeditionary force at Kut-el-Amara (*q. v.*) in 1915 was a hard blow to British prestige in the near East, but the status of the great empire was regained with the successful Mesopotamian expedition undertaken later by Sir Stanley Maude with Indo-British troops. Kut-el-Amara fell on February 25, 1917, and Bagdad on March 11.

Mesothorium (mes-ō-thō'ri-um), a disintegration product of thorium, intermediate between thorium and radiothorium. Mesothorium differs from radium chiefly in a more rapid loss of power. Whereas it has been calculated that it would need 1800 years before the energy of a gramme of radium be reduced by one-half, mesothorium retains its full energy only for the first few years. After this the force is gradually dissipated. Mesothorium has been used in the treatment of cancer.

Mesothorax (mes-ō-thor'aks), in entomology, the middle rising of the thorax.

Mesozoic Period (mes-ō-zō'ik; from Gr. *mesos*, middle, and *zōē*, *life*), the term applied by geologists to the geological period between the Palæozoic and the Cænozoic. It is coextensive with the secondary for-

uations, and includes the rocks of the Triassic, Oölitic and Cretaceous groups.

Mespilus (mes'pi-lus), the medlar, a genus of trees.

Mesquite (mes'kit; *Prosōpis glandulōsa*), a small tree allied to the acacia, common in Mexico, Texas, and other parts of western North America. It yields a gum not much inferior to gum arabic; its seeds are eaten, and a drink is prepared from the mucilage of its pods. Another species (*P. pubescens*) has pods that are eaten by the Indians, being rich in saccharine matter. They are of a twisted form, hence the name 'screw bean.'

Mess, in sea language, denotes a particular company of the officers or crew of a ship, who eat, drink and associate together; in military language, a sort of military ordinary, established and regulated by the rules of the service, for all the officers in a regiment, and supported by their joint subscriptions, supplemented by a small government allowance. Similar institutions are extended to the non-commissioned officers of a regiment, but the technical meaning of messing as applied to officers does not hold with regard to common seamen and soldiers.

Messalina (mes-a-lē'na), VALERIA, the third wife of the Roman emperor Claudius. She is notorious in history on account of her licentiousness and cruelty. She was murdered A.D. 48.

Messa'na. See *Messina.*

Messenia (mes-sē'ni-a), a country of ancient Greece, in the southern part of the Peloponnesus. Its capital was Messēnē, with the mountain fortress Ithōmē. On its southern coast lay the Messenian Gulf (now the Gulf of Coron); a ridge of Mount Taygētus separated it from Sparta. Messenia is celebrated for the long struggle of its inhabitants in defense of their liberty with the Lacedæmonians, with whom they waged three wars, the first extending from 743-724 B.C., the second from 685-668 B.C., and the third from 464-456 B.C. —Messenia gives name to a monarchy in modern Greece, with an area of 1221 square miles.

Messiah (me-sī'a; Greek form, *hiessias;* Hebrew, *Mashiach*), corresponding to the Greek *Christos* of the New Testament, that is, 'anointed,' has in the Old Testament several applications, as to the whole Jewish people, to the priests, to the kings ('the Lord's Anointed'), and even to Gentile kings, as persons who had been anointed with holy oil. The designation, however, owes its special importance to the application of it in the prophetic books of the Old Testament to an ideal holy king and deliverer whose advent they foretold. The whole of the prophetic pictures agreed in placing Jehovah in the central place of the desired kingship. These prophecies, which are called the Messianic prophecies, had at the time of our Lord come to be applied by the Jews to a temporal king who should free them from foreign oppression. They are affirmed by Jesus Christ and His apostles to apply to and be fulfilled in him; and this is the belief of the Christian Church, by which he is called 'The Messiah.' The rationalistic school of theologians assert that Jesus laid claim to the dignity either to meet the preconceptions of his countrymen, or because he felt that the truth which he taught was the real kingdom never to be destroyed which the God of Heaven was to set up.

Messina (mes-sē'na; ancient Greek name, *Zanklē;* Latin, *Messāna*), the chief commercial town and seaport of Sicily, capital of the province and on the strait of the same name. The harbor is one of the best in the Mediterranean. The manufactures consist chiefly of silk goods. The principal exports are silks, olive oil, oranges, lemons, and other fruits; wine, salted fish, lemon juice, essences, etc. Often visited by earthquakes, and more than once ruined, it was utterly destroyed in December, 1908, with a great part of its population of 150,000, by one of great violence, which destroyed also the city of Reggio and many towns. It has since been restored. Pop. 126,577.

Messina, STRAIT OF, the strait which separates Sicily from Italy. It has a length of about 20 miles, and varies in width from 2 miles in the north to 11 miles in the south, is very deep, and has a strong tidal current.

Messines Ridge, BATTLE OF. During the greater part of three years in which the British defenders held the Ypres region against all the efforts of the German forces, an elevation overlooking this city and the British trenches in its vicinity, the Wytschæte-Messines Ridge, lay under Teuton control, while from it they harassed their enemies with severe gunfire. For their own protection they had constructed an elaborate system of trenches, dugouts and wire-entanglements which they looked upon as impregnable. But there was a means of reaching them at a vital point, one which they had not taken into serious consideration, but for which General Haig had been diligently preparing during the early months of

1917. The method designed was one of deeply excavated mines, the use of armored 'tanks,' and one of the largest arrays of artillery gathered at any one point during the war. By the 1st of June all was ready and during the following week an intense fire from these guns, light and heavy alike, was poured on the heights and on the lines of communication in the rear. At the same time a fleet of airplanes hovered over the German lines, driving back the air patrols of the foe and advising the gunners of every movement of the enemy squadrons. All this meant to the German commanders the launching of a powerful assault, and reinforcements were hurried to the front through the blasting fire of the British batteries. The defenders already on the ridge were pinned to their trenches and dugouts, death hovering in the outer air.

But this was only the visible and audible portion of the British assault. For two years sapping and mining operations had been diligently pursued, burrowing under the ridge and constructing mines which now held more than 1,000,000 pounds of explosive ammunition. This work reached its final completion on the night of June 6, when the electrical engineers were ready to fire the volcanic mines that had been so long in preparation. The night in question began with a severe thunder storm in which the artillery of the heavens vied with that of the earth. When the storm had passed, the reserve force of men, guns and 'tanks' moved forward to the battle zone, and by 3 A. M. of the 7th all was ready for the terrific explosion. We may quote the words of Philip Gibbs, a newspaper correspondent:

'Out of the dark ridges of Messines and Wytschaete, the ill-famed Hill 60, there gushed up enormous volumes of scarlet flame from exploding mines, and of earth and smoke, all lighted by flames spilling over into fountains of fierce color, so that the countryside was illuminated by the red lights. The earth trembled and quaked, the British soldiers waiting to rush the first line trenches were rocked up and down, this way and that, as if in an open boat on a rough sea.'

So great was the roar of this gigantic explosion that it was heard by Lloyd George at his country home in England, 140 miles away. It leveled hills, Hill 60 being obliterated. It tore trenches into shapeless hollows, leveled the wire entanglements, and blew the defenders high into the air or buried them under tons of earth. Never in the history of war had this volcanic explosion been equalled. Its roar had hardly subsided when the guns opened with the most intense shell-fire of the whole war. The infantry darted forward under this fearful barrage with fixed bayonets, and in a few minutes the whole front line of trenches was in their hands. Of the dead Germans only a few were to be found. Most of them were buried in the huge grave excavated for them, a yawning chasm one hundred yards wide and sixty feet deep.

With the winning of the first line trenches ended the opening phase of the affair. The peak of the ridge had yet to be stormed, but in less than three hours the whole section south of Ypres, extending to a considerable width, was in British hands and the position was being rapidly consolidated into a new battle-line of the Allies. Following this came the third and final stage of the stupendous assault. The guns, which had so long fronted the ridge, were now hurried forward to the high ground now held by the infantry, the drivers urging their horses up the slopes, passing through the lines of cheering soldiers, to begin the assault of the rear defenses still in German hands. A strong resistance was here encountered, but by nightfall the victory was complete, and the whole rear position, extending along a front of five miles and to a depth of three miles, was occupied and strongly held by the victorious columns. So paralyzing was the tremendous blow that forty hours passed before the Germans were able to launch a counter-attack—one that completely failed. So well had the affair been managed that the loss of the victors was small as compared with the magnitude of their triumph. The killed and wounded numbered 10,000, of whom 7000 had light casualties. The German loss was estimated at 30,000, of whom 7000 were prisoners. How many lay entombed in the great grave that had been excavated was not possible to estimate.

Messuage (mes'wij), in law, is the term used for a dwelling house with a piece of land attaching, as garden, orchard, etc., and all other conveniences, as out-buildings, etc., belonging to it. The term is derived from the French *mesuage*.

Mestizos (mes-tē'zōs), people of mixed origin in countries where Spanish Europeans have settled and intermingled with the natives.

Meta (mā'ta), a great river of South America, a tributary of the Orinoco, which it joins in Venezuela, though the greater part of its course is in Colombia; length 700 miles.

Metabola (me-tab'o-la; Greek, *metabolē*, change), a term applied to insects that undergo metamorphosis.

Metabolism (me-tab'ol-ism). This term is used in biology to sum up the changes which take place within the body, or in a body cell, by which the food is changed into living tissue, and on the other hand, the tissues are disorganised and prepared to be expelled from the body. Thus it signifies the sum of the constructive and destructive processes. In theology, it has to do with the change of bread and wine in the eucharist. In poetry, it signifies a change from one meter to another.

Metacarpus (met-a-kar'pus), in anatomy, the part of the hand between the wrist and the fingers. See *Hand*.

Metacenter (met-a-sen'tèr), in physics, that point in a floating body in which, when the body is disturbed from the position of equilibrium, the vertical line passing through the center of gravity of the fluid displaced (regarded as still filling the place occupied by the body) meets the line which, when the body is at rest, passes through the center of gravity of the fluid and that of the body. In order that the body may float with stability the position of the metacenter must be above that of the center of gravity.

Metagen'esis. See *Generation* (*Alternate*).

Metalloid (met'a-loid), in chemistry, a term applied to all the non-metallic elementary substances. The principal metalloids include oxygen, hydrogen, nitrogen, carbon, chlorine, bromine, iodine, fluorine, sulphur, selenium, phosphorus, boron and silicon.

Metallurgy (met'al-ér-ji), the art of working metals, comprehending the whole process of separating them from other matters in the ore, smelting, refining, etc.

Metals (met'als). Elementary substances have been divided by chemists into two classes, *metals* and *non-metals* or *metalloids*, but these merge one into the other by gradations so imperceptible that it is impossible to frame a definition which will not either include some non-metallic bodies or exclude some metallic. The term metal is an ideal type, and is applied to those elementary substances which in the combination of physical characteristics which they present approach more or less nearly to it. The following are the chief characteristics of metals. They are opaque, having a peculiar luster connected with their capacity called *metallic*; insoluble in water; solid, except in one instance, at ordinary temperatures; generally fusible by heat; good conductors of heat and electricity; capable, when in the state of an oxide, of uniting with acids and forming salts; and having the property, when their compounds are submitted to electrolysis, of generally appearing at the negative pole of the battery. Many of the metals are also malleable, or susceptible of being beaten or rolled out into sheets or leaves, and some of them are extremely ductile, or capable of being drawn out into wires of great fineness. They are sometimes found native or pure, but more generally combined with oxygen, sulphur, and some other elements, constituting *ores*. The great difference in the malleability of the metals gave rise to the old distinction of *metals* and *semimetals*, which is now disregarded. The following—fifty-two in number—are the elementary substances usually regarded as metals:—aluminium, antimony, barium, beryllium or glucinum, bismuth, cadmium, cæsium, calcium, cerium, chromium, cobalt, columbium or niobium, copper, didymium, erbium, gallium, germanium, gold, indium, iridium, iron, lanthanum, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, osmium, palladium, platinum, potassium, rhodium, rubidium, ruthenium, scandium, silver, sodium, strontium, tantalum, tellurium, terbium, thallium, thorium, tin, titanium, tungsten, uranium, vanadium, yttrium, zinc, zirconium. Of these gold, silver, copper, tin, lead, zinc, platinum, iron, are the most malleable—gold, which possesses the quality in the greatest degree, being capable of being beaten into leaves $\frac{1}{10000}$ of a millimeter in thickness. The following, given in the order of their ductility, are the most ductile:—platinum, silver, iron, copper, gold, aluminium, zinc, tin, lead, platinum wire having been obtained of not more than $\frac{1}{1200}$ of a millimeter in diameter. The majority of the useful metals are between seven and eight times heavier than an equal bulk of water; platinum, osmium and iridium are more than twenty times heavier; while lithium, potassium and sodium are lighter. The metals become liquid, or otherwise change their condition, at very various temperatures: platinum is hardly fusible at the highest temperature of a furnace; iron melts at a little lower temperature; and silver somewhat lower still; while potassium melts below the boiling-point of water, and becomes vapor at a red heat, and it and sodium may be molded like wax at 16° C. (61° Fahr.). Mercury is liquid at ordinary temperatures, and freezes only at 39½° C. below zero (—39° Fahr.). Osmium and tellurium are also regarded by some as non-metals. All the metals, without exception, combine with oxygen,

sulphur and chlorine, forming *oxides*, *sulphides* and *chlorides*, and many of them also combine with bromine, iodine and fluorine. Several of the later discovered metals exist in exceedingly minute quantities, and were detected only by spectrum analysis, and there is every likelihood that research in this direction will add to the present list of metals.

Metamerism (me-tam'ér-ism), in chemistry, the character in certain compound bodies differing in chemical properties, of having the same chemical elements combined in the same proportion and with the same molecular weight; thus, aldehyde (C_2H_4O) and oxide of ethylene (C_2H_4O) have their elements in the same proportion and the same molecular weight, 44. Metameric bodies do not, however, belong to the same class or series of compounds. See *Isomerism*, *Polymerism*.

Metamorphic Rocks (met-a-mor fik), in geology, stratified or unstratified rocks of any age whose original texture has been altered and rendered less or more crystalline by subterranean heat, pressure, or chemical agency. The name is given more especially to the lowest and azoic, or nonfossiliferous, stratified rocks, consisting of crystalline schists, and embracing granitoid schist, gneiss, quartz-rock, mica-schist and clay-slate, most of which were originally deposited from water and crystallized by subsequent agencies. They exhibit for the most part cleavage, crumpling and foliation, and their lines of stratification are often indistinct or obliterated.

Metamorphosis (met-a-mor'fō-sis), any change of form, shape, or structure. In ancient mythology the term is applied to the transformations of human beings into inanimate objects, with which ancient fable abounds. In zoology it includes the alterations which an animal undergoes after its exclusion from the egg or ovum, and which alter extensively the general form and life of the individual. All the changes which are undergone by a butterfly in passing from the fecundated ovum to the imago, or perfect insect, constitute its *development*—each change, from ovum to larva, from larva to pupa, and from pupa to imago, constituting a *metamorphosis*. Insects which undergo a complete metamorphosis are known as *Heteromorphous* or *Holometabolic* insects. Others, such as the grasshoppers, locusts, bugs, dragon flies, etc., undergo a less perfect series of changes, and are termed *Hemimetabolic* or *Homomorphous* insects. The occurrence of metamorphosis is by no means confined to the lowest groups of the animal series, for we find the amphibian vertebrates—as in the case of frogs, newts, and their allies—exemplifying these phenomena in a very striking manner. The metamorphoses of the Annulosa, however, including the insects, crustaceans, worms, etc., are among the most marked and familiar with which we are acquainted.

Metaphor (met'a-fur), a figure of speech founded on the real or ideal resemblance which one object is supposed to bear, in some respect, to another, and by which a word is transferred from an object to which it properly belongs to another in such a manner that a comparison is implied, though not formally expressed. It may be called a simile without any word expressing comparison. Thus, 'that man is a fox,' is a metaphor, but 'that man is like a fox,' is a simile. So we say, a man *bridles* his anger; beauty *awakens* love or tender passions; opposition *fires* courage.

Metaphysics (met-a-fiz'iks; Gr. *meta*, after, and *physics*, physics), a word first applied to a certain group of the philosophical dissertations of Aristotle which were placed in a collection of his manuscripts after his treatise on physics. As since employed, it has had various significations, and recently it has been understood as applying to the science which investigates the ultimate principles that underlie and are presupposed in all being and knowledge. In the part of the Aristotelian treatise alluded to the problems were concerned with the contemplation of being as being, and the attributes which belong to it as such. This implies that things in general must be divided into beings or things as they are, and into phenomena or things as they appear. In modern usage metaphysics is very frequently held as applying to the former division, that is, to the ultimate grounds of being. To attain this end it takes into account the correlative of being, that is, knowledge; and of knowledge not as coming within the province of logic or of mental philosophy, but as it is in relation to being or objective reality. In this respect metaphysics is synonymous with ontology. The science has also been considered as synonymous with psychology, and to denote that branch of philosophy which investigates the faculties, operations, and laws of the human mind.

Metastasio (mā-tas-tā'zi-o), PIETRO BUONAVENTURA, an Italian poet, born at Assisi in 1698; died at Vienna in 1782. His true name was Trapassi, and his father was a common

workman. His poetical talents were early displayed in making rhymes and in improvisations. The lawyer Gravina, who accidentally became acquainted with his talents, took him under his protection, called him (by an Italianized translation of his name into Greek) *Metastasio*, paid great attention to his education, and on his death, in 1717, left him his whole estate. Two years afterwards, having spent his fortune, he entered a lawyer's office in Naples. There in 1722 he wrote a serenade for the birthday of the empress which brought him the favor of the Roman prima donna, Marianna Bulgarelli, called *La Romanina*. He resided with La Romanina and her husband in Rome till 1729, and during that time produced many operas, commencing with the *Didone Abbandonata* in 1724. His success was such that Charles VI invited him to Vienna in 1729, and appointed him poet laureate with a pension of 4000 guilders. Metastasio may be said to be the father of the modern Italian opera. His works, while not possessing the highest literary merit, were eminently fitted for musical effect.

Metatarsus (met-a-tar'sus), the part of the foot popularly known as the 'instep.' See *Foot*.

Metauro (me-ta'rō; anciently *Metaurus*), a river of Italy, in the Marches, which after a E. N. E. course of about 50 miles falls into the Adriatic. On its banks Hasdrubal was defeated and slain by the Romans (207 B. C.)

Metayer (me-tā'yĕr), a cultivator who tills the soil for a landowner on condition of receiving a share, generally a half of its produce. The *metayer system* is practiced chiefly in France and Italy, though 'farming on halves' is common in the United States.

Metazoa (met-a-zō'a), one of the two great sections into which Huxley divides the animal kingdom, the other being the Protozoa. The lowest of the Metazoa are the Porifera or sponges. That portion of the Metazoa which possess a notochord constitute the subkingdom Vertebrata; the rest are invertebrate.

Metchnikoff (mech'ni-kof), ELIAS, a Russian zoologist, born in Kharkoff gov. in 1841: became a professor at Odessa in 1870, and later head of the bacteriologic station. In 1890 he took up work in the Pasteur Institute, Paris, and upon Pasteur's death in 1895 became director. His theories with regard to the prolongation of life have attracted universal attention. Died in 1916.

Metcalf (met'kaf), VICTOR HOWARD, statesman, was born at Utica, New York, in 1853. He studied in Yale Law School, and practiced law at Oakland, California, from which State he was thrice elected to Congress (1899-1904). He served in President Roosevelt's cabinet, 1904-06, as Secretary of Commerce and Labor, and 1906-08, as Secretary of the Navy.

Metempsychosis (me-temp-si-kō'sis), transmigration; the passage of the soul from one body to another. See *Transmigration of the Soul*.

Meteor (mē'te-ur), a name originally given to any atmospheric phenomenon; it is now more usually applied to the phenomena known as shooting stars, falling stars, fireballs or bolides, aerolites, meteorolites, meteoric stones, etc. It is now generally believed that these phenomena are all of the same nature, and are due to the existence of a great number of bodies, many of them very small indeed, revolving round the sun, which, when they happen to pass through the earth's atmosphere, are heated by friction and become luminous. Under certain circumstances portions of these bodies reach the earth's surface, and these are known as meteorites or meteoric stones. These stones consist of known chemical elements. They have this peculiarity, that whereas native iron is extremely rare among terrestrial minerals it usually forms a component part, and frequently the whole, of meteorites, and is known as meteoric iron. Exceptionally large showers of meteors appear in August and November every year, and the November showers exhibit a maximum brilliancy every 33 years. As to the connection of meteors with comets see *Comets*.

Meteoric Iron. See *Iron (Native)*, and *Meteor*.

Meteoric Stones. See *Meteor*.

Meteorology (mē-te-or-ol'o-ji), the science or branch of knowledge that treats of atmospheric phenomena relating to weather and climate. The phenomena with which it deals and the instruments used in their observation are mainly these, viz.; temperature (thermometer), humidity (hygrometer), (anemometer), rainfall (rain-gauge), and atmospheric pressure (barometer), wind clouds. These phenomena are all referable to the action of the sun, and accordingly present variations depending upon locality (including the infinitely varied physical features of different places), the diurnal revolution of the earth upon its axis, and the annual revolution of the earth round the sun. It is the business

of meteorology to examine the laws which regulate these variations. It pursues its inquiries in two directions, (1) with reference to the variations observed at different times in the same locality with the view of obtaining average results as to its climate—climatology, and (2) with reference to the variations observed in different localities at the same time with the view of arriving at the laws which regulate the changes in the weather—weather study. In the prosecution of this study observations are taken at the same hour of Greenwich time at a number of stations situated over a large extent of the earth's surface. These observations include readings of barometer, thermometer, hygrometer, rain-gauge, anemometer, etc., with non-instrumental observation of clouds. The results which indicate the phenomena existing at that hour at the several stations are tabulated, or registered, formed into weather charts, etc. These charts are made by putting down on a map readings taken at the same moment over a large tract of country, and joining by lines the points where the readings agree. Since the general use of the electric telegraph this branch has assumed great practical importance. By its means observations made at many distant places may be immediately communicated to one center, and men of science are thus enabled to forecast with considerable accuracy the weather which may be expected in certain districts. Such forecasts can be made with great accuracy in tropical and subtropical countries where the atmospheric conditions are very constant, and variations from the average are consequently easily observed. They are attended with much more difficulty in temperate countries. In the United States, where the majority of storms rise in the district to the west of the Mississippi, and are thus capable of easy observation, great accuracy has been attained. The Weather Bureau originated in 1870, as an attachment to the Signal Service Office of the War Department. In 1891 it was transferred by law to the Department of Agriculture, its functions being closely allied to that interest. Its predictions of the coming weather (now termed 'forecasts') seldom extend beyond twenty-four to thirty-six hours in advance, and are telegraphed and published in bulletins twice daily. In the British Isles they are exceptionally difficult owing to the fact that on the side from which nearly all weather changes come, namely, the west, the existence of the Atlantic Ocean renders telegraphic warning of changes of weather impossible. The fact that a storm is traveling eastward may be telegraphed from America, but there is always a chance of its being dissipated or deflected long before it reaches the coasts of Europe. It having been observed, however, that a storm is always preceded by a fall of the barometer, the tendency to fall is observed some time before the minimum depression occurs; the notice of this tendency, together with observations of the wind and motions of cirrus clouds, are of much importance in the prediction of storms and the enabling of storm warnings to be sent out. The further eastward we travel in Europe the easier does the forecasting of the weather become. See *Cyclone*, *Anticyclone*, *Climate*, etc.

Methane (me'thān), the chemical name for marsh-gas. See *Firedamp*.

Metheglin (me-theg'lin), a name for the liquor otherwise called *Mead*.

Methodists (meth'o-dists), a sect of Christians founded by John Wesley, so-called from the fact that the name was applied to Wesley and his companions by their fellow-students at Oxford, on account of the exact regularity of their lives, and the strictness of their observance of religious duties. The religious movement which resulted in the foundation of this sect began at Oxford in 1729, the chief leaders besides John Wesley being his brother Charles and George Whitefield (see *Wesley*, *Whitefield*). The first general conference of the Methodists was held in 1744, and the Methodists were constituted a legally corporate body in 1784. Methodism is regarded as a revival of primitive Christian doctrine and discipline. It preaches a full, free and present salvation as the glorious privilege of every man—a theology at once experimental and evangelical. Regeneration is through repentance and faith. There are in addition to the ordained ministers local class preachers, leaders, trustees and stewards. The body is governed by the General Conference, including ministers and laymen, which meets quadrennially and is presided over by the bishops sitting alternately. In each district there is an annual conference of the ministers presided over by a bishop. There are also quarterly conferences of ministers and lay officers presided over by a district superintendent elected by the annual conference. The supreme legislative and judicial power is vested in the General Conference. The number of members at Wesley's death was 76,968; but there are now over 19,000,000 adherents. Various secessions have from time to time taken place from the origi-

nal body, which though differing as to points of church government generally agree as to doctrine. The Methodists are especially numerous in the United States, where they form numerically the leading Protestant denomination, numbering about 7,800,000 members. Of the several branches into which they have divided the *Methodist Episcopal Church* is the oldest and most prominent. Since 1845 it has been separated into two branches, the Methodists of the Southern States forming what is called the *Methodist Episcopal Church, South*. These two branches have a combined membership of over 7,400,000. There are also large numbers of colored Methodist Episcopalians, including the three branches of the *African Methodist Episcopal*, about 500,000 in membership; the *African Methodist Episcopal Zion*, 550,000; and the *Colored Methodist Episcopal*, 235,000. There are various divisions of the Church of much smaller membership, chief among these being the *Free Methodists*, organized in 1860, with about 34,000 members. The *Wesleyan Methodists* have a membership of about 20,000, the *Union American Methodist Episcopal*, 18,500, and the *Congregational Methodist*, 15,000, with several others of a few thousands each. In England the Methodists have also divided into a number of branches, chief among them being the *Calvinistic Methodists*, originating in a difference between Wesley and Whitefield concerning the Calvinistic doctrines, and now subdivided into three denominations, the *Whitefield Methodists*, the *Welsh Calvinistic Methodists*, and *Lady Huntingdon's Connection*. There are also the sects of *Bible Christians*, *Wesleyan Reform Union*, *Primitive Methodists* and the *United Methodists Free Churches*.

Methuen (me-thū'en), a town of Essex Co., Massachusetts, on the Spicket River, 2 miles N. N. W. of Lawrence. Cotton and woolen goods, boots and shoes, and some other articles are manufactured here. Pop. 11,448.

Methylated Alcohol or Spirits.

Spirits to which shellac and methylin alcohol, or wood-spirit, have been added, so as to render the mixture unpalatable. Such a mixture is allowed to be sold without excise duty, for the purpose of manufacture only. It is used as a solvent of resins and gums, in the manufacture of varnishes and aniline colors, and in preserving specimens, burning in spirit and other lamps, as a cleansing agent, and for various other purposes to which ordinary alcohol was formerly applied.

Metonic Cycle, Metonic Year,

the cycle of the moon, or period of nineteen years, in which the lunations of the moon return to the same days of the month; discovered by Meton, an Athenian mathematician, who flourished 432 B.C.

Metonymy (me-ton'u-mi), a figure in rhetoric by which the name of an idea or thing is substituted for that of another, to which it has a certain relation. Thus the effect is frequently substituted for the cause, as when *gray hairs* stands for *old age*; a part for the whole, as when *keel* is put for the whole *ship*; the abstract for the concrete, as 'What doth *gravity* (this *grave person*) out of his bed at midnight?'

Metope (met'u-pe), in architecture, the interval or square space between the triglyphs in the Doric frieze.

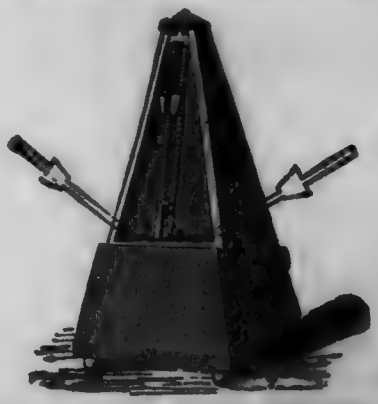
Metre (mē'tèr), rhythmical arrangement of syllables into verses, stanzas, strophes, etc. See *Rhythm*, *Verse*.

Metre, METRE (French pron. mā-tr), a French measure of length, equal to 39.37 English inches or 3.28 feet, the standard of linear measure, being the ten-millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of the meridian.

Metric System of Weights and Measures.

See *Decimal System*.

Metronome (met'ru-nōm), an instrument consisting of a weighted pendulum moving on a pivot and set in motion by clock-work; invented



Metronome, showing extent of vibrations.

about 1814, for the purpose of determining, by its vibrations, the quickness or slowness with which musical composi-

tions are to be executed, so as to mark the time exactly. There is a sliding weight attached to the pendulum rod, by the shifting of which up or down the vibrations may be made slower or quicker. A scale indicates the number of audible beats given per minute, and this must be made to agree with the number attached to the music by its composer.

Metropolis (me-trop'u-lis), properly a mother-city, a city in relation to colonies it had sent out; but the term is now applied to the chief city or capital of a state or country.

Metropolitan (me-tru-pol'i-tan), originally a bishop resident in a metropolis or the chief city of a province, now a bishop having authority over the other bishops of a province; that is, an archbishop. In the Greek church, the title of a dignitary intermediate between patriarchs and archbishops.

Metrosideros (me-tro-sid'ér-os), a genus of trees and shrubs, nat. order Myrtaceæ. *M. vera*, known as iron-wood, is a tree, a native

Iron-wood (*Metrosideros vera*).

of Java and Amboyna. Of the wood of this tree the Chinese and Japanese make rudders, anchors, etc. *M. robusta* is the rata of New Zealand, where it is employed in shipbuilding and in other ways. The trees of this genus have thick, opposite, entire leaves, and heads of showy red or white flowers.

Metternich (met'tèr-nik), CLEMENS LOTHAR WENZEL, Prince von Metternich, an Austrian statesman, born in 1773; died in 1859. He represented Austria as ambassador at various European courts between 1801 and 1809. In the latter year he became minister of foreign affairs. In this capacity he negotiated the marriage of the Archduchess Maria Louisa with Napoleon and conducted her to Paris. In 1813, after the French reverses in Russia, Austria gave in her adhesion to the other allied powers and declared war against France. From this period the policy, not only of Austria, but in a great measure that also of the leading continental powers, was shaped by Metternich. He was one of the plenipotentiaries who signed the Treaty of Paris, and he presided at the Congress of Vienna (1814). The object of his policy was to arrest the progress of what were called revolutionary principles. With this view he formed the scheme known as the Holy Alliance. He continued in power till, by the revolution of 1848, he was driven from office, and had to flee to England, where he remained till 1851, when he returned and lived in retirement at Vienna.

Metz, a town and important fortress of Alsace-Lorraine, on the Moselle, which here divides into several arms, 79 miles northwest of Strasburg. The major part of the town stands on a height within the fortifications, outside of which there is a series of strong detached forts. The cathedral is a late Gothic structure, surmounted by a spire of open work 397 feet high. The manufactures consist of woolens, cottons, hosiery, hats, muslin, glue, leather, etc. A battle was fought under its walls between the Germans and French in August, 1870, the Germans subsequently invested it, and being reduced to a state of famine, on October 28 it capitulated with 180,000 officers and men under the command of Marshal Bazaine. It was included in the cession of territory to Germany at the peace of 1871, and returned to France at the peace of 1919 (see *Treaty*). Pop. 68,598.

Meudon (meu-dôn), a town in France, department Seine-et-Oise, 6 miles E. N. E. of Versailles, a favorite holiday resort of the Parisians. Rabelais was for a short time curé of Meudon. Pop. (1906) 9597.

Meulen (meu'len), ANTHONY FRANCIS VAN DER, a battle painter, born at Brussels in 1634; and died in 1690. He was employed by Louis XIV to paint the scenes of his military campaigns, and thus his pictures chiefly consisted of landscapes with numerous figures.

Meung, or MEUN, or MEHUN (meun), JEAN DE, a French poet, surnamed from his lameness *Clopinet*, was born at Meung sur Loire, about 1250; died about 1322. He lived at the court of Philippe le Bel, and enjoyed a high reputation as a scholar, a poet, and a satirist.

Meunier (meuna-yā'), CONSTANTIN, a Belgian artist, born in Belgium in 1831; died in 1905. His realistic painting and sculpture illustrating the life of the mining poor in Belgium gained wide and deserved popularity. Among his best statues are *Ecce Homo*, *The Shingler* and *Fire Damp*.

Meurthe (meurt), LA, a river of France, which rises on the western side of the Vosges, and joins the Moselle about 7 miles N. of Nancy; total course about 100 miles.

Meurthe-et-Moselle (meurt-ē-mo-zel), a department of northeast France, formed in 1871 by uniting portions of the old departments of Meurthe and Moselle, in consequence of the cession by France to Prussia of a portion of her territory on the east under the treaty of Frankfort (May 10, 1871); area, 2024 square miles. The chief river is the Moselle. The soil is generally fertile. The principal cereals are wheat, oats and barley. Fruits are extensively grown, and the annual yield of the vines is large. The principal mineral products are iron ore and salt. The capital is Nancy. Pop. (1906) 517,508.

Meuse (meuz; Latin, *Mosa*, Flemish, *Maes*, Dutch, *Maas*), a European river, which rises in France, in the south of the department Haute-Marne, and flows through France, Belgium and Holland. Its principal affluents are the Sambre, which joins it on the left at Namur, and the Ourthe, which joins it on the right at Liége. At Gorkum it joins the Waal, one of the arms of the Rhine, and gives its name to the united streams. It is divided near Dordrecht into two great rivers, one bending round to the north and reaching Rotterdam, the other branch continuing west. The two branches again unite and empty into the North Sea. Its length, including windings, is 580 miles. It is navigable for about 460 miles, and canals unite it with the Moselle, Oise, and other streams. Many battles were fought between the French and German forces in the valley of the Meuse during the European war.

Meuse, a northeast department of France; area, 2404 sq. miles. The only mineral of importance is iron, which is extensively worked. Rather more than one-half of the whole surface is arable, and little of it is waste. The principal crops, besides corn, are hemp, flax and oleaginous seeds, and considerable tracts are covered with vines, which yield wine of good name. The manufactures are varied. Bar-le-Duc is the capital. Pop. 280,226.

Mexico (meks'i-kō), a republic of North America, between the United States and Central America, and having on the east the Gulf of Mexico, on the west the Pacific Ocean; area estimated at 767,005 sq. miles. Nearly one-half of this territory lies within the torrid zone, but the peculiar geological structure of the republic, that of a central elevated plateau, bounded on both sides by lowlands of torrid temperature, and rising into volcanic peaks, supported by the two branches of the Mexican Cordilleras, the Northeast and Northwest, causes the greatest diversity of climate. The principal summits, all of volcanic origin, are Popocatepetl (Smoking Mountain), about 17,500 feet, still indicating its activity by occasional clouds of smoke and ashes; Orizaba, or Citlaltepetl (Star Mountain), 18,250, and Ixtaccihuatl (White Lady), 16,960. All these are above the limit of perpetual snow, which is here about 15,000 feet. The largest river is the Rio Grande del Norte, forming part of the boundary with the United States, most of the others are rather insignificant. The lakes, which abound, are individually of little importance; some of them have no outlet. Mexico is a country of great natural resources. There is a vast variety of useful indigenous trees and plants, and many others have been introduced. Rubber is largely produced, and Mexico has become one of the chief sources of this useful material. It is especially the home of the cactus, which grows here in a great variety of forms. The fauna is greatly varied, comprising both temperate and tropical forms, birds of fine plumage being very abundant, as also serpents and saurians. The principal agricultural products are maize and other grains, sisal-hemp, tropical fruits, cotton, coffee, sugar, tobacco, indigo, vanilla, cochineal, etc., some of these growing in the hot lowlands, others, as wheat and corn, on the elevated plateau. Large numbers of cattle are reared, especially in the north. The chief industries (besides agriculture and mining) are the manufacture of cottons and woolens, pottery, tobacco and cigars, leather, soap, sugar refining, brewing and distilling (principally from the agave or maguey), etc. Mexico is rich in minerals, especially silver and petroleum, which are the most valuable of the exports. Other minerals are gold, copper, iron, quicksilver, antimony and sulphur, the latter in vast quantities in the crater of Popocatepetl. The Mexican ports on the Atlantic side are most of them insecure. On the western coast there is, however, a series of

magnificent ports, from Acapulco to Guaymas, many of which are scarcely if at all frequented. The imports consist chiefly of cotton, woolen and linen manufactures, wrought-iron and machinery; and the exports of the precious metals, sisal-hemp, coffee, hides and mahogany and other woods. The railways are being rapidly developed, largely by aid of United States capital, and the country being opened to commerce. The length of railways in 1910 was 15,256 miles, including a line across the Tehauntepec isthmus from the Atlantic to the Pacific, with a large transit trade.

Administration, etc.—Mexico is divided into twenty-seven States; two Territories, Lower California and Tepic; and the Federal District, which comprises Mexico, the capital of the republic, and a small portion of the adjoining territory. The population in 1910 was 15,063,207. The proportion of the different races in the population is believed to be 20 per cent. of pure whites, 43 per cent. of mixed race, and the remainder Indians. The Creoles are naturally the dominant race, and the Spanish language is generally spread over Mexico. Roman Catholicism, the state religion of Mexico until 1857, is still the prevailing religion. But there is now no connection between church and state. All religions are tolerated, but no religious body can own landed property. Primary education is compulsory, but the law is not strictly enforced. The schools are supported partly by the central and partly by the state government, and partly by charitable foundations supported by voluntary subscriptions. The present form of government is that of a federal republic, each member of which manages its own internal concerns. The supreme executive power is vested in a president, who has powers very similar to those of the President of the United States. The revenue usually amounts to $80,000,000; the debt, foreign and domestic, amounts to about $226,000,000. The exports in 1910 amounted to $120,508,-002; the imports to $97,039,050.

History.—Prior to 1521 Mexico was inhabited by an Aztec race and ruled by native emperors. (See *Aztecs.*) This race had attained a considerable degree of civilization, and interesting remains of its architecture are existent in the teocallis or pyramids of Cholula, Pueblo and Papantla. In 1521 Mexico was conquered by the Spaniards under Hernando Cortes. Cortes called it New Spain, and was created captain-general, but in 1535 was displaced by a viceroy. From that date till 1821 the country was one of the viceroyalties of Spanish America, and governed almost absolutely. The revolution begun by a priest, Hidalgo, in 1810, continued with more or less vigor till 1821, and secured the independence of Mexico. After an unsuccessful attempt to secure a Bourbon prince for the throne, Iturbide, the chief of the insurgents, caused himself to be proclaimed emperor, May 18, 1822, under the title of Augustin I, but was forced to abdicate, March, 1823. A new form of government, on federal republican principles, was then established. Texas rebelled in 1835 and won its independence, and a war with the United States in 1847–48 led to the loss of a great section of its territory. A French army invaded Mexico in 1862, and the Austrian archduke Maximilian was made emperor (1864–1867). In 1871 Juarez was elected president, succeeded by Lerdo de Tejada, who in 1876 was overthrown by Porfirio Diaz, who was continuously re-elected until 1910. Francisco Madero in that year organized a revolution, and forced Diaz to resign. Madero was later elected president; but in February, 1913, he too was forced to resign and was soon after assassinated. General Victoriano Huerta, commander of the federal troops, was then proclaimed provisional head of the republic, and before the year was out he had established himself as dictator. The United States refused to recognize Huerta and occupied Vera Cruz, and a revolution against him under Carranza and Villa forced him to withdraw, Carranza succeeding as president. But enmity between Carranza and Villa led to new revolts and a state of anarchy succeeded, which continued throughout 1915. An attack on a New Mexican town by bandits under Villa in March, 1916, led to an invasion of Mexico by U. S. troops. These were later withdrawn and Carranza was legally elected to the presidency.

Mexico, capital of the republic of Mexico, is situated within the state of Mexico in the federal district (473 sq. miles), about 7400 feet above the level of the sea, near several lakes. It is situated at about an equal distance from Vera Cruz on the Mexican Gulf, and Acapulco on the Pacific, and is laid out with great regularity. It is on the site of the ancient city of Tenochtitlan, which was destroyed on the capture of Mexico by the Spaniards in 1521. The principal public buildings are the Cathedral, a large Renaissance building, founded in 1573, on the north side of the Plaza, a public square of 14 acres; the National Palace, used for government offices, on the east side of the Plaza; the City Hall, on the south side of the Plaza; the National Museum, National Library,

etc. There are numerous convents, hospitals, churches, theaters, etc. The manufactures are of comparatively limited extent, and the trade is mostly in the hands of foreigners. This city enjoys a mild climate, and a healthy atmosphere. Pop. (1910), 470,659.

Mexico, one of the states of the Mexican republic; area, 8950 sq. miles. It lies in the south of Mexico, and forms an elevated region, one of the best cultivated and most thickly peopled parts of the republic. Its capital is Toluca, but it embraces within its boundaries the city and Federal District of Mexico. Pop. 975,019.

Mexico, a city, capital of Audrain Co., Missouri, on a branch of Salt River, 50 miles N. by E. of Jefferson City, on three railroads. It is the seat of Hardin College for women and the Missouri Military Academy. It manufactures flour, fire brick, stove linings, shoes, etc. Pop. 5989.

Mexico, Gulf of, a large bay or gulf of the Atlantic, oval in form and nearly surrounded by a continuous coast line 3000 miles in length, of the United States and Mexico; estimated area, 800,000 square miles. From it is named the Gulf Stream, which issues from it by the Strait of Florida.

Meyer (mī'er), George von Lengerke, cabinet official, was born at Boston, Massachusetts, in 1858. He became a member of the Massachusetts legislature in 1892 and speaker 1894-96. He was sent as ambassador to Italy in 1900, to Russia in 1905, and was appointed Postmaster General in 1907 and Secretary of the Navy in 1909.

Meyerbeer (mī'ér-bär), Giacomo, musical composer, born in Berlin in 1791; died at Paris in 1864. His father, Jakob Beer, was a rich banker of Jewish descent. He gave early proof of his devotion to music, and at nine was regarded as one of the best pianists in Berlin. He studied under Bernhard Anselm Weber at Berlin, and the Abbé Vogler at Darmstadt, where he began his life-long friendship with Karl Maria von Weber. His first two operas, *Jephtha's Daughter* and *Abimelek*, the one produced at Munich and the other at Vienna, having failed, he went to Italy. There he rapidly composed a series of operas in the Italian style, which were generally well received. In 1826 he went to Paris. There he produced *Robert le Diable* (1831); *Les Huguenots* (Paris, 1836); *Le Prophète* (1849); *Pierre le Grand* (1854); *L'Africaine* (1865), etc. In these Parisian operas he ceases to be an imitator of the Italians, and it is upon them that his fame as a composer is founded. Besides his operas Meyerbeer wrote a great number of songs, an oratorio, cantatas, a *Te Deum*, etc.

Meyrick (mér'ik), Sir Samuel Rush, an English archæologist, born in 1783; died in 1848. He formed a finely arranged collection of medieval armor, now in South Kensington Museum. His chief work is the beautifully illustrated *Critical Enquiry into Ancient Armor* (best ed. 3 vols., 1844).

Mezereon (me-zē're-on; *Daphne Mezereum*), a well-known shrub grown in gardens, having fragrant pink flowers that appear in spring before the leaves, and are followed by red and poisonous berries. The bark is exceedingly acrid, and has been used in medicine. See *Daphne*.

Mézières (mā-zyär), a town of France, capital of department Ardennes, on the right bank of the Meuse, 120 miles northeast of Paris. It is a fortress of the second class. Pop. 7884.

Mezzanine (met'sa-nēn), in architecture, a story of small height introduced between two higher ones; an entresol.

Mezzofanti (met-so-fän'tē), Giuseppe, cardinal, distinguished for his knowledge of languages, was born in 1771, at Bologna, and died at Naples in 1849. He succeeded Mai as keeper of the Vatican library. Towards the end of his life he is said to have understood and spoken fifty-eight languages, but he rendered no valuable services to learning.

Mezzotint (mez'ō-tint; It. *mezzo*, middle, half, and *tinto*, tint), a particular manner of engraving on copper or steel in imitation of painting in Indian ink, the lights and gradations being scraped and burnished out of a prepared dark ground. The surface of the plate is first completely covered with minute incisions, so that it would give in this condition a uniform black impression. The design is then drawn on the face, and the dents are erased from the parts where the lights of the piece are to be, the parts which are to represent shades being left untouched or partially scraped according to the depth of tone.

Mhow, or Mow (mou), a town and British cantonment, Hindustan, Holkar's Dominions, 13 miles southwest of Indor. It was one of the centers of the Sepoy mutiny of 1857.

Miako. See *Kioto*.

Miami (mī-ä'mi), a river of the United States, in Ohio, joining the Ohio below Cincinnati; length 180 miles.

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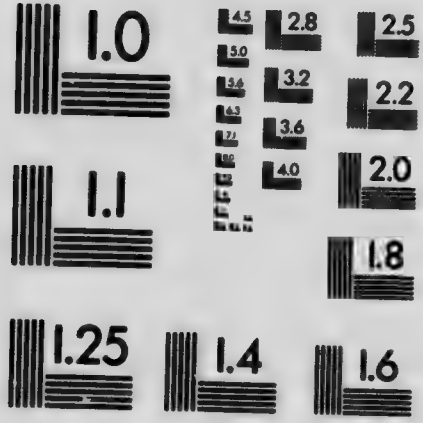

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Miami, a city of Dade Co., Florida, at the mouth of the Miami River. It has steamship connection with Havana and other ports. Pop. 5471.

Miani, or MEANEE (mē-an'ē), a village of India, situated on a branch of the Indus, 6 miles north of Haidarabad, the scene of a battle fought on February 17, 1843, in which Sir Charles Napier defeated the Ameers of Sind.

Miasma, pl. MIASMATA. See *Malaria.*

Miautse (mi-aut'se), a race of people found in the provinces of Yunnan, Kweichow, Kwang-tse and Kwang-tung in China. They are one of the aboriginal tribes of the country.

Mica (mī'ka), a mineral of a foliated structure, consisting of thin flexible laminæ or scales, having a shining, pearly, and almost metallic luster. These are sometimes parallel, sometimes interwoven, sometimes wavy or undulated, sometimes representing filaments. The laminæ of mica are easily separated, and are sometimes not more than the 300,000th part of an inch in thickness. The plates are sometimes as large as 18 inches diameter. They are employed in Russia for window panes, and in that state are called *muscovy-glass.* Mica enters into the composition of the crystalline rocks, as granite, gneiss, mica schists, chlorites, talcose rocks, and occurs in trappean and volcanic products. It is found also in many sedimentary rocks, as shales and sandstones, giving them their laminated texture. In the latter case, it is derived from the disintegration of the crystalline rocks. It is essentially a silicate of alumina, with which are variously combined small proportions of the silicates of potash, soda, lithia, oxide of iron, oxide of manganese, etc., in accordance with which several species have been constitued, as *common* or *potash mica, lithia mica, magnesia mica, pearl mica.* Regarded as minerals, varieties of mica have received the names of biotite, lepidolite, muscovite, lepidomelane, steatite, etc.

Micaceous Rocks (mī-kā'shus), rocks of which mica is the chief ingredient, as mica-slate and clay-slate.

Micah (mī'ka), the sixth of the minor prophets, a member of the tribe of Judah. He prophesied in the reigns of Jotham, Ahaz and Hezekiah, and was a contemporary of Isaiah. His style is pure and correct, his images bold and vivid.

Mica Schist, Mica Slate, a metamorphic rock, composed of mica and quartz; it is highly fissile and passes by insensible gradations into clay-state.

Michael (mī'kel), ST. (Hebrew, 'he who is equal to God?'), in Jewish theosophy, the greatest of the angels (Daniel x, 13, 21; xii, 1), one of the seven archangels. In the New Testament he is spoken of as the guardian angel of the church (Jude, ver. 9; Rev. xii, 7). There is a festival of St. Michael and All Angels in the Western Church, held on September 29. (See *Michaelmas.*)—The order of St. Michael and St. George is a British order of knighthood dating from 1818. It consists of Knights Grand Cross (G.C.M.G.), Knights Commanders (K.C.M.G.), and Companions (C.M.G.). The ribbon of the order is blue with red stripe down the center. The badge is a white star of seven double rays, having in the center a representation of St. Michael overcoming Satan. The motto is *Auspicium melioris ævi.*

Michael, ST. or SAO MIGUEL, the largest of the Azores, famous for the production of oranges and lemons. Area 300 square miles. Surface mountainous. The population is 125,183; capital, Ponta Delgado.

Michael Angelo. See *Buonarroti.*

Michaelis (mi-hā-ā'lis), JOHANN DAVID, a German theologian and orientalist, born in 1717; died in 1791. He was professor of philosophy in the University of Göttingen from 1745 till his death. His labors in biblical criticism and history are of great value. His principal works are *Mosaisches Recht* (translated into English, under the title of *Commentaries on the Laws of Moses*); *Introductions to the Study of the Old and New Testaments* (the latter has been translated by Marsh); *Spicilegium Georaphiæ, Hebræorum; Translations of the Old and New Testaments;* and grammatical and lexicographical productions.

Michaelmas (mik'el-mas), the feast of St. Michael and All Angels (see *Michael, St.*). It falls on the 29th of September, and is supposed to have been established towards the close of the fifth century. In England, Michaelmas is one of the regular dates for settling rents.

Michaelmas Daisy, a name applied to various perennial species of aster, which are common inhabitants of flower borders, growing to the height of 2 feet, and blooming about Michaelmas.

Michaud (mi-shō), JOSEPH FRANÇOIS, a French historian and publicist, born in 1767; died in 1839. His principal works are *Histoire des Croi-*

sades, *Bibliothèque des Croisades*, *Biographie Moderne*, and *Biographie Universelle* (originated 1811).

Michel (mi-shell), FRANCISQUE XAVIER, a French antiquarian and miscellaneous writer, born at Lyons in 1809; died at Paris in 1887. He edited a large number of old MSS., and translated the works of several British poets. His best-known works are *Les Ecossais en France, et Les Français en Ecosse*, and *A Critical Inquiry into the Scottish Language*.

Michelet (mēsh-lā), JULES, a French historian and miscellaneous writer, was born in Paris in 1798; died in 1874. In 1821 he was called to the chair of history in the Collége Rollin, where he was also professor of ancient languages and of philosophy till 1826. After the revolution of 1830 he was appointed chief of the historical section of the archives of France, and in 1838 became professor of history at the Collége de France. He lost all his offices at the *coup d'état* in 1851. His principal historical works are: *Histoire de France* (18 vols., 1833-66); *Histoire de la Révolution Française* (7 vols., 1847-53); *Histoire Romaine; Précis de l'Histoire Moderne; Précis de l'Histoire de France jusqu'à la Révolution; Origines du Droit Français*. He wrote also a number of works on social subjects, and after 1856 produced several books on natural history and philosophy.

Michigan (mish'i-gan) one of the north-central United States; area, 57,980 square miles. It consists of two separate peninsulas—one projecting eastward between Lakes Superior, Huron and Michigan, and bounded inland by Wisconsin; the other projecting northward between Lakes Michigan, Huron, St. Clair and Erie, and bounded on the south by Ohio and Indiana. It has upwards of 1100 miles of lake-coast, with numerous bays and excellent harbors. The northwestern peninsula, occupying nearly a third of the whole surface, is comparatively elevated, and presents a succession of mountains and lakes, plains, rivers and forests. The surface of the other peninsula is gently undulating, and rises gradually from the lakes towards its center. It is mostly covered with fine forests of timber, interspersed with plains and prairies. Agriculture is the staple industry, the chief cereals being wheat and Indian corn. Wheat of excellent quality is produced on the land cleared of timber. The remaining crops include oats, barley, buckwheat, rye, hay, potatoes, beans, beets, etc. In the w. and s. w. is a prolific fruit belt, producing apples, peaches, pears, plums and other fruit. The lumber industry once so important, has decreased within recent years; but manufactures have increased at rapid rate. The cultivation of fruit trees is receiving increasing attention, and considerable quantities of apples and peaches are exported. The mines in the northern peninsula contain enormous deposits of red hematite iron ore, of unrivaled purity and excellence, from which are obtained great quantities of iron. Here also are seated very rich copper mines, the copper often occurring in large masses of pure metal. Salt of unsurpassed purity occurs in various parts of the lower peninsula. It is obtained from beds by wells and the yield is large, being second only to that of New York. Manufacturing industries are varied and important. The commerce of the state is greatly benefited by its large navigable waters and by its extensive system of railways, which measure about 9000 miles. The capital is Lansing, but the commercial metropolis and much the largest city is Detroit, Grand Rapids being next in size. In the schools education is free, and excellent provisions are made for advanced studies in higher branches. At the head of the state educational system is the University of Michigan, situated at Ann Arbor. The first settlements in Michigan were made by the French. It was included in the territory surrendered by Britain to the United States after the Revolutionary war. Michigan became a state of the Union in 1837, at which date it had 174,647 inhabitants. Pop. (1910) 2,810,173.

Michigan City, a city of Laporte county, Indiana, situated on Lake Michigan, about 38 miles E. S. E. of Chicago. It contains the Indiana State Prison. It has important manufactures, including railroad cars, chairs, furniture, hosiery, gloves, etc. Its lake commerce and lumber trade are leading interests. Pop. 19,027.

Michigan, LAKE, the second largest of the great lakes of North America. It is wholly within the United States, having the State of Michigan on the east and northwest, Wisconsin and Illinois on the west, and Indiana on the south. On the northeast it communicates with Lake Huron by the narrow strait of Mackinaw. It is 350 miles long, and on an average 60 miles broad; area, estimated at 22,400 sq. miles. The lake is 578 ft. above sea level; the greatest ascertained depth is about 870 feet.

Michoacan (mē-chō-a-kän'), one of the states of Mexico, on the Pacific Coast; area, 22,656 sq. miles.

It is to a large extent elevated and mountainous, among the mountains being the volcano of Jorullo. It has rich mines of gold, silver, and other minerals. Capital Morelia. Pop. 991,649.

Mickiewicz (mits-kyä'vich), ADAM, a Polish poet; born in 1798; died in 1855. He wrote several epics, and is regarded as the chief national poet of his country.

Mickle (mik'l), WILLIAM JULIUS, poet, born in Dumfriesshire, Scotland, in 1734; died in 1788. At first he engaged in business as a brewer, but not succeeding he devoted himself to literature, and removed to London in 1764. In 1775 appeared his principal production, a translation of the *Lusiads* of Camoens. Among the best of Mickle's original productions is the ballad of *Cumnor Hall*, which suggested to Sir Walter Scott the subject of his novel of *Kenilworth*.

Micmacs (mik'maks), a tribe of North American Indians, mostly inhabiting New Brunswick and Nova Scotia, and numbering some 3600. Their language has been reduced to writing, and a dictionary of it has been compiled.

Microbes. See *Germ Theory*.

Micrometer (mī-krom'e-tèr), an instrument used with a telescope or microscope, for measuring very small distances. Micrometers are variously constructed but in perhaps the most common form (the *filar micrometer*) the principle of operation is that the instrument moves a fine thread or wire parallel to itself in the plane of the image of an object, formed in the focus of a telescope, the wire or thread being moved by means of delicate screws with graduated heads, so that the distance traversed by the wire can be measured with the greatest precision. The micrometer is of the utmost value to the astronomer, and in trigonometrical surveys, and military and naval operations.

Microphone (mī'kru-fōn), an instrument to make faint sounds more audible, invented by David Hughes in 1878. The most sensitive conductor of sound is willow-charcoal, dipped when at white heat into a bath of mercury. A piece of charcoal, thus prepared, placed vertically between two carbon-blocks which are connected with a telephone, is a common form of microphone, and magnifies sounds, otherwise inaudible, enormously.

Microscope (mī'kru-skōp), an optical instrument consisting of a lens or combination of lenses (in some cases mirrors also) which magnifies objects that cannot be seen by the naked eye, or enlarges the apparent magnitude of small visible bodies, so as to permit the study of their minute texture or structure. For a good microscope an achromatic combination of lenses to form an object-glass and a well-made eyepiece are necessary. The magnifying power of an instrument may be increased by (1) increasing the magnifying power of the object-glass; (2) increasing the power of the eyepiece; (3) increasing the distance between the objective and the eyepiece. The single or simplest form of microscope is nothing more than a lens or sphere of any transparent substance, in the focus of which minute objects are placed. When a microscope consists of two or more lenses, one of which forms an enlarged image of objects, while the rest magnify that image, it is called a *compound microscope*. A *binocular microscope* is a microscope with two tubes starting from a point above the object-glass, which is single, and gradually diverging to fit the eyes of the observer. The rays of light arising from the object under observation are caused to diverge into the two tubes by a prism. A *solar microscope* has a reflector and a condenser connected with it, the former being employed to throw the sun's rays on the latter, by which it is condensed to illuminate the object placed in its focus. A *lucernal microscope* is the same in principle as the solar, except that a lamp is used, instead of the sun, to illuminate the object. When an oxyhydrogen lime-light is used it is called an *oxyhydrogen microscope*.

Binocular Microscope.

Microtasimeter (mī-kru-ta-sim'e-tèr), an instrument for measuring extremely small variations in the expansion or contraction caused by heat, moisture, etc. It has been used by astronomers to indicate the altered radiation of heat from the sun during an eclipse or when the atmosphere is filled with moisture.

Midas (mī'das), in Greek mythology, king of Phrygia, whose request that whatsoever he touched should turn to gold was granted by the god Diony-

sus (Bacchus). In this way even his food became gold, and it was not until he had bathed in the Pactolus that the fatal gift was transferred to the river. Another legend is that, in a musical contest be-

Tomb of Midas, Phrygia.

tween Pan and Apollo, Midas, who was umpire, decided in favor of the former; whereupon the angry Apollo bestowed upon the presumptuous critic a pair of ass' ears.

Middelburg (mid'l-burg), a town of Holland, capital of the province of Zeeland, near the middle of the island of Walcheren; a well-built and remarkably clean town. It is an ancient place, and was taken by the Dutch from the Spaniards in 1574. Pop. (1903) 19,002.

Middle Ages, a term applied loosely to that period in European history which lies between the ancient and modern civilizations. With some writers the period began when the western Roman Empire was overthrown by Odoacer in 476; with others when Charlemagne was crowned emperor of the West in 800; while yet others make it begin when the Frankish Empire ended in 843. The end of the period is variously conceived to have closed with the Reformation in Germany; with the discovery of America by Columbus; with the invention of printing; and with the end of the Thirty Years' war in the Peace of Westphalia (1648). The outstanding political events of the Middle Ages include the rise of the German, French and Italian nationalities; the rise of the Norman power, and the conquest of England by William of Normandy; the crusades; and the establishment of the Holy Roman (or German) Empire. The feudal system and the power of the papal hierarchy were widespread.

Middleboro (mid'l-bur-o), a town of Plymouth County, Massachusetts, 34 miles S. by E. of Boston. It has manufactures of boots and shoes, lumber, woolens, varnish, wood and paper boxes, etc. Pop. 8214.

Middlesboro, a city of Bell County, Kentucky, about 46 miles N. of Knoxville, Tennessee. It has coal, coke and iron works and distilling interests. Pop. 7305.

Middlesbrough (mid'la-b'rub), a river port of England, in the North Riding of Yorkshire, 6 miles from the mouth of the Tees and 44 miles north of York. In 1829 the site of Middlesbrough was occupied by a solitary farmhouse. Its rapid growth has been due to its suitability as a port for the Durham coal fields, and to the smelting of the iron ore abounding in the adjacent Cleveland Hills, an industry begun in 1840, and especially associated with the names of Bolckow and Vaughan. There are numerous blast furnaces and rolling mills, foundries, engineering works, shipyards, nail works, bolt and nut works, etc. Salt is being extensively worked also, there being a thick bed of rocksalt at a depth of 1300 feet. The streets are well laid out, and there are the usual institutions of a modern and progressive town. The docks are extensive and commodious. Pop. 104,787.

Middlesex (mid'l-seks), the metropolitan county of England, one of the smallest in the kingdom, but among the most important, from its containing the greater portion of the city of London; area, 283 sq. miles. The surface is flat, except the slight eminences, Hampstead, Highgate and Harrow-on-the-Hill, on the north side of London. The chief river is the Thames, forming the southern boundary. The soil is mostly gravelly, not naturally fertile, but enriched in the vicinity of London by a profuse application of fertilisers. Pop. (1911) 1,126,694.

Middle Temple. See *Inns of Court.*

Middleton (mid'l-tun), a town of England, in Lancashire, 6 miles N. of Manchester and 3½ miles W. of Oldham. Extensive cotton, silk, and other works employ a large part of the inhabitants. Pop. (1911) 27,983.

Middleton, Conyers, an English writer, born in 1683; died in 1750. He became a student, and in 1706 a fellow of Trinity College, Cambridge. He is best known as the author of a *Life of Cicero* (1741), and a *Free Inquiry into the Miraculous*, the latter

causing its author to be regarded as an infidel.

Middleton, THOMAS, an English dramatist, born about 1570; died in 1627. Little is known of his life except that he lived in London, and was employed to write court masques and pageants while he held the office of city chronologer. He wrote the comedies of *A Trick to Catch the Old One*, *The Family of Love*, *The Phœnix*, *Michaelmas Term*, *A Mad World My Masters* and *The Witch*, which is supposed to have suggested some of the witch scenes in Macbeth. He was also associated with Rowley in the production of *The Fair Quarrel* and *The Changeling*, while he wrote *The Widow* along with Fletcher and Jonson.

Middletown (mid'l-toun), a city of Connecticut, one of the capitals of Middlesex County, on the W. bank of Connecticut River, 14 miles S. of Hartford. It contains a State Hospital for the Insane, the Berkeley Divinity School (Episcopal), and the Wesleyan University (Methodist), also an Industrial School for Girls. It has active manufactures, producing hydraulic machinery, woolens, cottons, silk, hardware, etc. Opposite, beyond the river, is Portland, where the celebrated Portland sandstone is quarried. Pop. 20,749.

Middletown, a city of Orange County, New York, 24 miles W. S. W. of Newburgh. Here is a State Hospital for the Insane (Homœopathic). There is a very large tannery, condensed milk and farm implement works, also iron, hat, blanket and saw factories. It has several collegiate institutions. Pop. 15,313.

Middletown, a city of Butler County, Ohio, on the Miami River and the Miami and Erie Canal, 34 miles N. of Cincinnati. It has a number of large paper mills, and a large cigar factory; also foundries, machine shops, engine, carriage and paper box factories. Pop. 13,152.

Middletown, a borough of Dauphin County, Pennsylvania, on the Susquehanna River, 9 miles S. E. of Harrisburg. There are here large car and stove works, furniture and shoe factories, hosiery and planing mills, etc. Pop. 5374.

Midgard (mid'gard), in Scandinavian mythology, the abode of the human race, formed out of the eyebrows of Ymir, one of the first giants, and joined to Asgard, or the abode of the gods, by the rainbow-bridge.

Midge (midj), the ordinary English name given to numerous minute species of flies, resembling the common gnat. The eggs are deposited in water, where they undergo metamorphosis.

Midhat Pasha (mid'hat pa'sha), a Turkish statesman, born in 1822; died in 1884. He was educated in Constantinople; entered the Turkish civil service; attracted attention by his administrative capacity; became governor of Bulgaria in 1862, and was ultimately in 1876 created grand vizier. In this position he was supreme in the palace, and caused Abdul Aziz and Murad V to be deposed. In the following year, however, he was himself banished; and in 1881, after a judicial investigation into the murder of Abdul Aziz, he was condemned and exiled to Arabia, where he died.

Midhurst (mid'hurst), a very ancient town of Sussex, England, situated on the right bank of the Rother, 46 miles southwest of London. Pop. of rural district, 15,283.

Midianites (mid'i-an-its), an Arabian tribe, represented in the Old Testament as the descendants of Midian, son of Abraham by Keturah (Gen. xxv, 2), and described as engaged at an early period in commerce with Egypt. They dwelt in the land of Moab (Arabia Petræa), to the southeast of Canaan. One portion of them inhabited the country on the east of the Dead Sea.

Midnapur (mid'na-pŏr), a town of Bengal, capital of Midnapur district. It is 68 miles W. by S. of Calcutta, and has brass and copper works and an active trade. Pop. 33,140.

Midrash (mid'rash), is the general name given among the Jews to the exposition of the hidden meaning of the Scriptures. It includes any and every ancient exposition on the law, psalms, and prophets.

Midshipman (mid'ship-man), a petty officer in the navy, occupying the highest rank among the petty officers. In the United States navy the appointments for service are made from the cadet graduates of the Annapolis naval academy. Cadets are appointed to the academy on the recommendation of the members of Congress for their districts, on the same conditions that govern appointments to West Point. No person can be appointed a midshipman in the British navy until he has served at least one year as a cadet, and passed his examinations. After six years' service in all, and passing further examinations, the midshipman is promoted to the rank of sublieutenant.

Midsummer Day is the feast day of the nativity of St.

John the Baptist, and is commonly reckoned the 24th of June. On midsummer eve, or the eve of the feast of St. John, it was the custom in former times to kindle fires (called St. John's fires) upon hills in celebration of the summer solstice.

Midwifery (mid'wif-ri), a branch of medicine or surgery, also called obstetrics, being the art of aiding and facilitating childbirth, and of providing for the preservation of the health and life of the mother during and after her delivery.

Mifflin, Fort, a fort on Mud Island, in the Delaware River, 7 miles from Philadelphia, forming one of the defences of that city.

Mifflin, Thomas, born in Philadelphia, Pennsylvania, of Quaker parents in 1744: died in 1800. He was a member of the first Continental Congress (1774), and on the outbreak of hostilities volunteered for service. He received rapid promotion, and was in 1776 appointed quarter-master-general, attaining the rank of major-general in the following year. He was a ringleader in the Conway Cabal, which had for its purpose the substitution of General Horatio Gates for Washington as commander-in-chief. The intrigue failing, and charges of mismanagement having been brought against him, he retired in 1779. He held subsequently, among other official posts, that of delegate to Congress (1782–84), president of that body (1783–84), member of the Federal Constitutional Convention (1787), and first governor of Pennsylvania (1790–99).

Mignonette (min'yon-et; *Reseda odorata*), a well-known fragrant annual plant of the nat. order Resedaceæ, a native of Egypt. It is largely cultivated in flower-pots, in apartments, and in the boxes which are placed outside windows. A sub-biennial variety, called *tree mignonette*, rather more odorous than the common sort, is well suited for the drawing-room.

Migration of Animals, the phenomenon of certain animals moving, either periodically or at irregular times and seasons, from one locality or region to another, sometimes far distant. Migration has been observed in mammals, birds, fishes, and insects, but it probably occurs in other groups of the animal world, the observation of which is less easy than that of the higher forms. The buffaloes or bisons of North America used, it would seem, to migrate in herds from one place to another. Many fishes (for example salmon, lampreys, etc.) make periodical journeys from the sea towards fresh water streams and rivers for the purpose of depositing their eggs. The migratory habits of locusts, and those of certain species of ants, etc., exemplify migration among insects; but among the birds we meet with the best marked instances of migration. With sea birds (for example, puffins), the day of arrival or that on which they appear in certain localities may be prognosticated with perfect safety; and similarly, the day of departure appears in some birds (for example, swifts) to be almost as accurately timed. Storks have been known to return regularly to their old nests, and the same has been observed of swallows. The mode in which birds migrate varies greatly even in those of the same species. The swallows migrate in bodies comprising vast numbers, and so also do cranes, wild ducks, geese, and many other forms. The migratory flight is generally made against the wind; and certain species of birds, as quails, for instance, appear to wait for favoring winds, and to delay their flight by resting on islands when the wind is unfavorable. Regarding the causes of migration, science cannot at present definitely pronounce. Probably a combination of causes, or different causes in different cases, as scarcity or plenty of food-supply, the powerful influences of temperature, and the influence of the breeding season, may contribute to the migratory 'instinct.' It has been further suggested by Mr. A. R. Wallace that this migratory habit or instinct has gradually been acquired since a time when the breeding and feeding grounds of the animals were coincident, these having been gradually separated by climate and geological changes.

Mihrab (mih'rab), an ornamented recess or alcove in a mosque, near the mimbar or pulpit. The people pray in front of the mihrab, which always marks the direction of Mecca.

Mikado (mi-kä'dō), the emperor of Japan, the spiritual as well as temporal head of the empire. See *Japan*.

Miknas. See *Mequinez*.

Milan (mi'lan; Italian, *Milano*; German, *Mailand*; Latin, *Mediolānum*), a city of Northern Italy, capital of the province of its own name, situated on the small river Olona, in the middle of the Lombard plain between the Adda and Ticino. The town is built in the form of an irregular polygon, and is partly surrounded by a wall or rampart,

outside of which runs a fine road shaded by chestnut trees. The city is entered by eleven gates, several of which are magnificent, and the leading streets proceeding from these gates are tolerably wide, well paved, and lighted. The chief open space is the Piazza d'Armi (Place of Arms), part of which has been made into an amphitheater capable of containing 30,000 spectators. The castle, now a barrack, fronts the Piazza d'Armi on one side; at the opposite side is the Porta Sempione with the fine Arco Sempione or Arco della Pace, built of white

Section of Cathedral, Milan.

marble. The Piazza del Duomo, in front of the cathedral, is the center of the traffic of Milan. Among the public edifices the first place belongs to the Duomo or cathedral, a magnificent structure, inferior only in size to St. Peter's at Rome and the cathedral of Seville. It is built of brick faced with white marble, and is 477 feet in length, 183 feet in width, nave 155 feet high, cupola 220 feet, tower 360 feet. The prevailing style is Gothic; in form it is a Latin cross; it is ornamented with turrets, pinnacles, and 2000 statues; and the roof is of white marble. It was begun in 1386, and was only completed in 1805. There are many other fine edifices, among them being the Palazzo di Brera or Delle Scienze Lettere ed Arte, containing the picture gallery and the library of the academy (200,000 vols.); and the Ambrosian Library, the earliest, and still one of the most valuable public libraries in Europe. The chief theater is La Scala, accommodating 3600 spectators. The manufactures include silks, cottons, lace, carpets, hats, earthenware, jewelry, etc.—The first distinct notice of Milan occurred B.C. 221, when it was subdued by the Romans. In the third century after Christ it ranked next to Rome. It became a republic in 1101, and having refused to submit to the Emperor Frederick I, it was destroyed by him in 1162. It was soon rebuilt, but long continued to be torn by internal factions, headed by the leading nobility, among whom the Visconti and Sforzas were the most prominent. At a later date it belonged, in common with Lombardy, to Austria, until 1859, when by the Peace of Villafranca Lombardy was ceded to Piedmont. Pop., including suburbs, (1911) 599,200.

Milazzo (mi-lät'sō), a seaport in Sicily, about 22 miles west of Messina. Here Garibaldi defeated the Neapolitan troops in his Sicilian campaign of 1860. Pop. 16,422.

Mildew (mil'dū), a name given to various minute parasitic fungi producing a state of disease or decay in living and dead vegetable matter, and in some manufactured products of vegetable matter, such as cloth and paper. Numerous cultivated crops, fruit trees, etc., suffer from mildew.

Mile (mīl), a measure of length or distance, and used as an itinerary measure in almost all countries of Europe. The English and American statute mile contains 8 furlongs, each 40 poles or perches, of 5½ yards. The statute mile is therefore 1760 yards, or 5280 feet. It is also 80 surveying chains, of 22 yards each. The square mile is 6400 square chains, or 640 acres. The Roman mile was 1000 paces, each 5 feet; and a Roman foot being equal to 11.62 modern English inches, it follows that the ancient Roman mile was equal to 1614 English yards, or very nearly 11-12ths of an English statute mile. The ancient Scottish mile was 1984 yards = 1.127 English miles; the Irish mile, 2240 yards = 1.273 English miles; the German short mile is 3.897 English miles, the German long mile 5.753. The geographical or nautical mile is the sixtieth part of a degree of latitude, or 2028 yards nearly.

Mileage (mīl'ij), in the United States, fees paid to certain officials, such as members of Congress, of State legislatures, etc., for their traveling expenses, at so much per mile. The system has in the past led to gross abuses, each senator and representative estimating for himself the distance he had traveled. Now, however, there is a fixed table of mileage, the total annual cost for both houses of Congress being nearly $150,000.

Miles (mils), Nelson Appleton, soldier, was born at Wachusettville, Massachusetts, in 1839. In 1861, at the outbreak of the Civil war, he entered the service as captain of volunteers and took part in most of the principal engagements in Virginia, rising in rank to major-general of volunteers in 1865. He continued in the regular army, being made colonel in 1867, brigadier-general in 1880, and major-general in 1890, and taking part in the operations against the Apaches and other Indian tribes. He was the senior officer commanding the United States army during the Spanish war, and led in person the expedition against Porto Rico in 1898. He retired August 8, 1903. He is the author of *Personal Recollections*, *Observations Abroad*, and many magazine articles and military reports.

Milfoil (mil'foil), the common name of *Achillea millefolium*, nat. order Compositæ, a plant which grows commonly on banks, by road sides, and on dry pastures. It has numerous very finely divided leaves, and corymbs of small, white, or sometimes rose-colored flowers. The plant has highly astringent properties.

Milford (mil'ford), or Milford Haven, a seaport in the county of Pembroke, Wales, on the north shore of the inlet called Milford Haven. There are docks capable of accommodating the largest vessels, and Milford has recently become a port for transatlantic steamers. Milford belongs to the Pembroke district of parl. boroughs. Pop. (1911) 12,038.—The inlet called Milford Haven, one of the most capacious natural harbors in Britain, is a deep indentation in the southwest coast of Pembroke, stretching about 10 miles from east to west, with a breadth of from 1 mile to 2 miles, and branching off into numerous bays, creeks and roads.

Milford, a town (township) of Worcester County, Massachusetts, containing a manufacturing village of same name, 32 miles s. w. of Boston. Here are extensive granite quarries and manufactures of boots and shoes, straw and rubber goods and machinery. Pop. of town 18,055.

Military Orders, in Europe, religious associations whose members united in themselves the double characters of monk and knight. These orders arose about the period of the Crusades, the first to be formed being the Hospitallers. Their primary duties were to tend sick pilgrims at Jerusalem, afterward to protect them also on their way to the Holy City. The order of the Templars soon followed, and to these many others were later added. These religious associations have mostly been

abolished or have fallen into disuse, though some still subsist as orders of knighthood.

Militia (mi-lish'a), a general term which means the able-bodied male citizens of a country liable to military service, whether or not they are organised. In most countries men between the ages of eighteen and forty-five are considered included in the militia. The United States militia consists of every male citizen of the respective States, Territories, and the District of Columbia, and every male of foreign birth who has declared his intention to become a citizen, who is more than 18 and less than 45 years of age. The *Organised Militia* is divided into two classes: the National Guard and the Naval Militia. During the European war the National Guard was incorporated into the service of the United States, and the organised militia of the separate States practically ceased to exist. See *National Guard, Conscription, Britain, France*, etc.

Milk, the secretion peculiar to the females of the class Mammalia, which is secreted in the mammary glands, and which is employed as the nutritive fluid of the young mammal after its birth. Examined by aid of the microscope, milk is seen to consist of a clear fluid, containing many globules, the average size of which is about $\frac{1}{10000}$ of an inch in diameter, and each appears to consist of oily matter invested by a thin layer of albumin. When churned, the globules in the milk are forced together *en masse*, and constitute butter. The cream of milk is formed by the globules rising to the top of the milk without coalescing; the 'skim'-milk, or that left after the cream is formed, being of a pale bluish color, owing to its being deprived of its fatty or oily particles. In itself, milk exhibits the type of a perfect food. The *casein* of milk represents the albuminous or flesh constituents of food; the butter supplies the fatty or oleaginous parts; the water exists as such in milk, while it contains the saccharine constituents in the form of milk-sugar, and the inorganic parts in the form of phosphates of lime and alkaline chlorides, so necessary for the production of bone. The milk of every animal has certain peculiarities which distinguish it from all other milk, but the general properties are the same in all. The specific gravity of milk varies from 1.03 to 1.04. In the making of butter, cream is allowed to stand for some time, during which an acid is generated. It is then put into a churn and agitated, when the butter gradually separates. The *butter-milk*, or that left after the separation of the butter by churning, contains the casein, sugar, etc., of the milk; and the milk left after creaming also contains the greater part of the casein and milk-sugar. Milk may be coagulated by various substances, but *rennet*, prepared from the fourth stomach of the calf, is generally used for domestic purposes. The result of coagulation is to separate the milk into a thin fluid, or *whey*, and a thick whitish deposit, the *curd*. (See *Butter, Cheese*.) Whey has a pleasant taste, and contains a large quantity of milk-sugar, hence it is frequently used as drink, and from its nutritious quality it is administered to delicate people. It is also sometimes made to undergo fermentation, by which a very weak spirituous fluid is obtained. (See *Koumiss*.) In some States milk is not permitted to be sold which does not contain a fair amount of the proper nutritive constituents. It has been held that even milk wholly derived from the cow, if below the standard at which with proper feeding cow milk can reasonably be maintained, is adulterated within the meaning of the act, but no exact standard of purity has been established. Condensed milk (which see) is now largely used, and consists of ordinary milk which has undergone a process of evaporation and been mixed with sugar. Milk is very liable to be infected with the germs of disease, either from disease in the cow, contamination from unhealthy persons, or the use of infected water in cleaning vessels; and many epidemics of zymotic disease have been traced to impure milk.

Milk-fever, a febrile state sometimes induced in women when the milk begins to be secreted after parturition. It is accompanied with severe pains and throbbing in the head, flushing in the face, thirst, heat and dryness of skin. The pulse is full, the tongue furred, bowels costive, urine scanty, and light and sound are painful. The treatment consists in cooling saline purgatives, good ventilation and moderate temperature in apartments, and encouraging the free flow of milk. Other medicines may be necessary. Milk-fever attacks the lower animals, and in cows it is best prevented by unstimulating diet, and by milking the cow regularly ten days before calving.

Milk-plant. See *Jew-bush*.

Milk-snake, the *Ophiobolus eximius*, a harmless snake of the United States.

Milk-tree. See *Cow-tree*.

Milk-weed, a name for plants of the genus *Asclepias*.

Milkwort (milk'wŭrt), a pretty plant, *Polygala vulgaris*, order Polygalaceæ, abounding in a milky juice, and believed by the ignorant to promote the flow of milk in the breasts of nurses.

Milky-way. See *Galaxy*.

Mill, originally, a machine for grinding and reducing grain or other substance to fine particles; now applied also to machines for grinding or polishing by circular motion, and especially to complicated machinery for working up raw material and transforming it into a condition in which it is fit for immediate use or for employment in a further stage of manufacture. In the first sense of the word we have *flour-mills* and *meal-mills*, *cider-mills*, *coffee-mills*; in the second sense we speak of a *lapidary's mill*; and in the third sense we speak of *cotton-mills*, *spinning-mills*, *weaving-mills*, *oil-mills*, *saw-mills*, *bark-mills*, *fulling-mills*, etc. The word commonly includes the building for the special accommodation of the machinery, as well as the machinery itself. The oldest kind of flour or meal mill was the handmill or *quern* (which see). See also *Grinding*.

Mill, James, born at Logie Pert, Forfarshire, Scotland, in 1773; died in 1836. He was educated at the grammar school of Montrose and the University of Edinburgh; received license as a preacher, but abandoned this profession as the result of a change in his theological opinions; accompanied Sir John Stuart to London and became tutor in his family; edited the *Literary Journal*, and contributed articles to the various reviews; also writing a *History of British India*. In consequence of the knowledge which his researches had given him of Indian affairs, he was appointed assistant-examiner of correspondence by the East India Company, and soon afterwards became chief-examiner. He was a large contributor to the *Westminster Review*; wrote articles on social and political subjects for the *Encyclopædia Britannica*; published a treatise on the *Elements of Political Economy* (1821-22), and an able *Analysis of the Phenomena of the Human Mind* (1829), etc.

Mill, John Stuart, son of James Mill, was born in London in 1806; died at Avignon in 1873. He was trained under the immediate influence of his father, and at the age of three began to study the Greek alphabet, while at eight he was studying Herodotus, Xenophon, and Plato, and entering upon a course of Latin, Euclid and algebra. At the age of fourteen he entered upon a course of political economy, and thereafter this strenuous education of the boy ceased—so far, at least, as the strict surveillance of his father was concerned. It left a deep influence, however, upon his subsequent life and labors. His fifteenth year was spent in France; on his return he studied law for a time, and in 1823 he obtained a clerkship in the East India House, remaining in the company's employment till it was supplanted by the crown in 1858. In 1823 the *Westminster Review* was begun by the followers of Bentham, and young Mill was one of its earliest contributors, while from 1835 to 1840 he was its principal conductor. In his twenty-first year he edited Bentham's work *On Evidence*. In 1843 appeared the first of his two chief works, *A System of Logic, Ratiocinative and Inductive*, the second being *Principles of Political Economy*, 1848. To these he afterwards added his work *On Liberty*, 1859; *Thoughts on Parliamentary Reform*, 1861; *Utilitarianism*, 1862; the *Examination of Sir William Hamilton's Philosophy*, and a *Study of Auguste Comte and Positivism*, 1865. In this last year he was returned to parliament as member for Westminster, where he advocated a measure to admit women to the suffrage, took part in the Reform Bill debates, etc. At the election of 1868 he was defeated and retired to Avignon. Besides the works already mentioned he published *Considerations on Representative Government*, 1861; *The Subjection of Women*, 1869; and *The Irish Land Question*, 1870. His *Autobiography* was published in 1873, and the three essays, *Nature*, *The Utility of Religion* and *Theism*, in 1874. Mill's works on logic and political economy are standard text-books. In the former he placed the system of inductive logic on a firm basis. See *Logic*.

Millais (mil'ăs), Sir John Everett, was born at Southampton in 1829. He gained his first medal for drawing when nine years old; became a student at the Royal Academy; exhibited his first picture, *Pizarro Seizing the Inca of Peru*, in 1846; and received the gold medal for an historical painting, *The Tribe of Benjamin Seizing the Daughters of Shiloh*, in 1848. In his earlier days he was a leader of the Pre-Raphaelite School, but on attaining maturity in art he abandoned the peculiarities for which that school is noted. As the result of this new departure Millais painted such pictures as *Ferdinand Lured by Ariel*, *Mariana in the Moated Grange*, *The Huguenot Lovers*, *The Black Brunswicker* and *Ophelia*, while its influence was also apparent in his landscapes of *Chill October*, *The Fringe of the Moor*,

etc. Among his later works are, *The Northwest Passage*, *The Princess in the Tower*, *Effie Deans*, *Cinderella* and *Mercy—St. Bartholomew's Day, 1572*. In portraiture he held the foremost rank, and painted a number of the most distinguished men of his day. He was made a baronet in 1885, and was decorated with the Legion of Honor. Many of the works of Millais are well known by engravings. He died in 1896.

Millar, ALEXANDER COPELAND, American educator, born at McKeesport, Pa., in 1861, taught English and German in Grove's High School, Dallas, Texas, became president of the Central Collegiate Institute of Altus, Ark. (now the Hendrix College). He was ordained a minister of the Methodist Episcopal Church, 1888, and was for many years on the staff of the *Western Methodist*, first as associate editor, then as editor-in-chief. He is the author of *Twentieth Century Educational Problems*, and a number of poems. He was head of the good roads movement in Arizona and president of the State Teachers' Association.

Millau (mē-yō), a town of Southern France, department of Aveyron, 31 miles southeast of Rodez. It has coal mines, manufactures of leather, leather gloves, silk mills. It was a strongly fortified town, but after its unsuccessful revolt against Louis XIII, in 1620, its fortifications were dismantled. It was one of the great centers of Calvinism in southern France in the sixteenth century. Pop. 16,853.

Milledgeville (mil'ej-vil), a city, capital of Baldwin Co., Georgia, and formerly capital of the State. It is situated on the Oconee River, 72 miles N. E. of Macon. Here is the Georgia Military College and Normal and Industrial School, and two miles distant the State Lunatic Asylum. It has grist and cottonseed-oil mills, etc. Pop. 4385.

Millennium (mil-en'i-um), an aggregate of a thousand years; a word used to denote the thousand years mentioned in Rev. xx, 1-5, during which period Satan will be bound and restrained from seducing men to sin, and during which, millenarians believe, Christ will reign on earth with his saints. The near approach of the millennium has been often foretold.

Millepede (mil'i-pēd; L. *mille*, a thousand, *pes*, *pedis*, a foot), a name common to animals resembling centipedes, of the order Myriapoda, from the number of their feet. The most common is the *Iulus sabulōsus*, about 1¼ inches long. The young when hatched have only three pairs of legs, the remainder being gradually acquired till the number is complete, which is usually about 100 pairs.

Millepora (mil-ep'o-ra), MILLEPORIDÆ, a genus and family of reef-building branching corals.

Miller (mil'er), HUGH, geologist, was born at Cromarty, Scotland, in 1802, and became a stone-mason. While working at his trade he studied literature, wrote a good deal, and in particular became proficient in geology. His first publication appeared in 1829, under the title of *Poems Written in the Leisure Hours of a Journeyman Mason*, and this was followed in 1835 by the prose volume of *Scenes and Legends of Cromarty*. He was then appointed to a post in a bank at Cromarty, and while employed in this capacity took an active part in the religious controversy that ended in the Disruption (which see). In 1840 he went to Edinburgh as editor of the *Witness* newspaper, after 1843 the chief organ of the Free Church. In this paper he printed the work subsequently published under the title of *The Old Red Sandstone*, which attracted the immediate attention of the scientific world and established his reputation as a geologist. This was followed by *First Impressions of England and its People*; *Schoolmasters*, a charming account of his earlier life; and *The Testimony of the Rocks*, in which he tried to reconcile the Mosaic account of creation with the teachings of geology. Having just finished this latter work, his brain collapsed from over-pressure, and he died by a pistol-shot from his own hand at Portobello in 1856. His *Schools and Schoolmasters* was supplemented by *Life and Letters*, published in 1871. Besides the volumes already mentioned, his collected works include *Essays Historical and Critical*; *The Cruise of the Betsy*; *Rambles of a Geologist*; *Tales and Sketches*; *Edinburgh and its Neighborhood* and *The Headship of Christ*.

Miller, JOAQUIN, the pen name of Cincinnatus Heine Miller, born in Indiana in 1841. He spent some time in the California mining districts; lived with the Modoc Indians for five years; edited a newspaper called the *Democratic Register*; studied law and was called to the bar in Oregon, and became district judge in Canon City. He subsequently settled in New York. He has written *Pacific Poems* (1873), *Songs of the Sierras* (1873), *Songs of the Sun Lands* (1873), *Ship of the Desert* (1875), besides novels and dramas, and is noted for his graphic pictures in verse of frontier life and incident. He died February 17, 1913.

Miller, PATRICK, born at Dalswinton, Scotland, in 1730; died in 1815. He patronized Burns, and as early as 1786 made experiments in steam navigation.

Miller, WILLIAM, line engraver, born at Edinburgh, in 1796; died there in 1882. He studied engraving at Edinburgh and also under George Cooke in London, after which he settled down at Edinburgh. His work was much appreciated by Turner, and he engraved many plates after that master. He also engraved important figure subjects after George Harvey, and landscapes after Horatio M'Culloch. In perfectness of tone, and in expressing by line stormy skies and the fluid quality of water, stormy seas, and still rivers, his work is exceptionally excellent.

Miller, WILLIAM, a religious enthusiast, was born in Pittsfield, Massachusetts, in 1782; died in 1849. He studied the prophecies of the Bible and in 1831 predicted the second coming of Christ and that the world would be destroyed in 1843. Hundreds of people became converts to his belief and prepared for their ascent to heaven on the day appointed. There are still believers in his doctrine, known as Millerites or Second Adventists.

Miller's Thumb. See *Bullhead.*

Millet (mil'et), a common name for various species of cereals yielding abundance of small seeds, more particularly called *Panicum miliaceum* and *P. miliare*, cultivated in the East Indies, China, Arabia, Syria, Egypt, etc., where it is used as human food. The leaves and panicles are given both green and dried as fodder to cattle. *German millet* (*Setaria germanica*) is cultivated on account of its seeds, which are used as food for cage-birds. *Italian millet* (*Setaria italica*) is a closely allied species. For other grains known as millet, see *Dhurra* and *Dukhn.*

Millet, FRANCIS DAVIS, an American artist and author, was born at Mattapoisett, Massachusetts, November 3, 1846, and died in the great 'Titanic' disaster April 15, 1912. He was director of decorations at the Columbian Exposition of 1893, and was successful in the fields of mural and genre painting.

Millet (mē-lā), JEAN FRANÇOIS, a French artist, born at Gruchy, near Cherbourg, in 1814; died in 1875. He worked with his peasant father in the fields; studied drawing at the academy of Cherbourg; from thence passed with an allowance from this town to the atelier of Delaroche, in Paris, and exhibited at the Salon in 1840. As a student and until the death of his first wife, in 1844, he was frequently in the greatest poverty, and his life subsequently was by no means free from difficulty. In 1849 he left Paris and settled among the peasants of Barbizon, on the edge of Fontainebleau Forest, and devoted himself to transferring their simple everyday life to his canvases, which he did with great truth of sentiment and subdued poetic charm. Of his paintings may be mentioned *The Sheep-shearers*, *The Gleaners*, *The Sower*, *The Shepherdess with Her Flock* and *The Angelus.* The last named has attracted special attention, and his pictures are highly esteemed and sell at enormous prices.

Milliard (mil'yard), the French collective name for a thousand millions; familiar in connection with the five milliards of francs (5000 millions of francs, or $1,000,000,000) paid by France as war indemnity to Germany in 1871-1873.

Milligramme (mil'i-gram), in the system of French weights and measures, the thousandth part of a gramme, or .0154 of an English grain.

Millimetre (mil'i-mē-tèr), a French lineal measure containing the thousandth part of a meter; equal to .03937 of an inch.

Millvale (mil'vāl), a town of Allegheny County, Pennsylvania, on the Allegheny River, opposite Pittsburgh, with which it is connected by a bridge. It has lumber mills, and manufactures of saws, boxes, metal and novelty ware, etc.; also breweries. Pop. 7869.

Millville (mil'vil), a city of Cumberland County, New Jersey, on the Maurice River and on the West Jersey R. R., 40 miles S. by E. of Philadelphia. It has glass factories, extensive bleach and dye works, a cotton mill, wrapper and silk-twaist factories, etc. It ships fish, produce, and sand and gravel for steel castings. Pop. 12,451.

Milman (mil'man), HENRY HART, born in London in 1791; died in 1868. He was educated at Dr. Burney's Academy, Greenwich, at Eton and at Oxford. In 1812 he received the Newdegate prize for an English poem on the Apollo Belvidere; published *Fazio*, a tragedy, which was performed at Covent Garden Theater; and in 1815 was appointed vicar of St. Mary's, Reading. He delivered the Bampton lectures in 1827; became professor of poetry at Oxford, 1821-31; appointed rector of St. Margaret's, Westminster, in 1835, and dean of St. Paul's in

1849. His principal works are: *Samor*, a legendary poem (1818); *The Fall of Jerusalem* (1820); *The Martyr of Antioch* (1821); *History of the Jews* (1829); *History of Latin Christianity* (1855); etc. His last work was the *Annals of St. Paul's Cathedral*, which, after his death, was completed and published by his son.

Milne-Edwards (mil'n-ed'wärds), HENRI, a French naturalist, the son of English parents, was born at Bruges in 1800; died in 1885. He studied medicine and received his degree in Paris; succeeded Cuvier at the Academie des Sciences in 1838; was appointed professor of natural history at the Museum in 1841; professor of zoology in 1862. He published *Elements of Zoology*, *Natural History of Crustaceans*, etc., but his great work was *Leçons sur la Physiologie et l'Anatomie Comparée* (1857-83, 14 vols.).

Milo. See *Melos*.

Milreis (mil'rēs), a Portuguese coin, equal to one thousand *reis*, or a little over one dollar.

Mil'roy, ROBERT HUSTON (1816-90), an American soldier, born in Washington county, Ill., educated at Norwich University, Vt. In 1850 he graduated from the law school of the Indiana University and was appointed circuit court judge. At the outbreak of the Civil War he joined the northern forces, becoming later a brigadier-general in 1862. He fought under McClellan and Rosecrans in West Virginia, and under Fremont in the Shenandoah Valley. He became major-general of volunteers in 1862. He attempted to hold Winchester, Va., against Lee's forces but was defeated with heavy loss. His conduct was investigated, but he held that by detaining Lee's army at Winchester he had given opportunity to Meade to collect his forces at Gettysburg. Toward the close of the war his conduct was again made the subject of investigation and he resigned from the army.

Milt. See *Spleen*.

Miltiades (mil-tī'a-dēz), an Athenian general of the fifth century B.C. When Greece was invaded by the Persians he was elected one of the ten generals, and drew up the army on the field of Marathon, where, B.C. 490, he gained a memorable victory. Next year he persuaded the Greeks to intrust him with a fleet of seventy vessels, in order to follow up his success. With this, to gratify a private revenge, he attacked the island of Paros, but was repulsed, and dangerously wounded. On his return to Athens he was impeached, and thrown into prison, where he soon after died of his wound.

Milton (mil'ton), JOHN, a famous English poet, the son of John Milton, scrivener, London, was born in the metropolis in 1608; died there in 1674. His father had him carefully educated, and at the age of seventeen he entered Christ's College, Cambridge, where he resided for seven years, took his B.A. and M.A. degrees, and excelled in Latin verse and English composition. It had been intended by his parents that he should enter the church, but their puritanical beliefs and his own scruples regarding the oaths decided otherwise. During this period were written: *On the Death of a Fair Infant* (1625-26); *On the Morning of Christ's Nativity* (1629); *On Shakespere* (1630); *On Arriving at the Age of Twenty-three* (1631); and the *Epitaph on the Marchioness of Winchester*. Leaving the university, he went to reside with his father, who had retired to Horton in Buckinghamshire, and here he remained for the following six years. In this leisured retreat he studied classical literature, philosophy, mathematics and music. To this period belong his Latin hexameters *Ad patrem;* the fragment called *Arcades; L'Allegro* and *Il Penseroso;* the beautiful monody of *Lycidas*, occasioned by the death of his college friend, Edward King; and the pastoral masque of *Comus*, played before the Earl of Bridgewater at Ludlow Castle in 1634. In 1637, on the death of his mother, he made a continental journey, in which he visited Paris, where he was introduced to Grotius; Florence, where he met Galileo; and Rome and Naples. After remaining abroad for fifteen months he returned to England. His *Italian Sonnets* and some other pieces were written during this journey. The home at Horton having been broken up, Milton settled in the metropolis, and undertook the education of his two nephews, the sons of his sister, Mrs. Phillips, and to these, betimes, were added the sons of a few personal friends who boarded or received daily lessons at his house in Aldergate Street. While settled here his *Paradise Lost* was partially sketched out, but the immediate fruits of his pen were (1641-42) vigorous polemical treatises entitled *Of Reformation Touching Church Discipline in England; Of Prelatical Episcopacy; Animadversions Against Smectymnuus; The Reason of Church Government;* and the *Apology for the Animadversions*. In the summer of 1643 Milton married Mary Powell, the daughter of a royalist family. Divided from

her kinsfolk by politics, he was also dissimilar to his wife in age—she being little more than seventeen, while he was thirty-five. Moreover, she found his habits austere and his house dull, with the result that she returned to her father about a month after marriage. Milton quickly made his private trouble a plea for public protest against the marriage laws in his pamphlets on the *Doctrine of Divorce*, *The Judgments of Martin Bucer*, *Tetrachordon* and *Colasterion*. In the end, however, his wife returned in 1645, bore him three daughters, and continued to live with him until her death in 1653. Besides his pamphleteering he was at this time occupied in publishing the first edition of his *Minor Poems in Latin and English* (1645), with no apparent recognition of his claims as a poet. In connection with his divorce pamphlets he was prosecuted by the Stationers' Company for having published them without license or registration. His answer to this was the famous *Areopagitica*, a speech for the liberty of unlicensed printing, which he addressed to the parliament of England. When in 1649 Charles I was executed and a republic established, Milton avowed his adherence to it in his pamphlet *Tenure of Kings and Magistrates*, and was appointed foreign (Latin) secretary to the commonwealth. While occupying this position he wrote in 1649 *Eikonoklastes* ('Imagebreaker') in answer to the *Eikon Basilike* (q. v.), and his *Pro Populo Anglicano Defensio* ('Defense of the People of England'), the latter in answer to Salmasius of Leyden, who had vindicated the memory of the late king. In this literary task his eyesight suffered so much that in 1652 he became totally blind. Nevertheless he continued Latin secretary with the assistance of Andrew Marvell, and dictated some of Cromwell's most important despatches. Upon the death of the latter, and in the confusion which resulted, Milton in 1659 wrote his *Ready and Easy Way to Establish a Free Commonwealth*. But when Charles II was restored a few months later, the blind politician remained in hiding, his books were burned by the common hangman, and he himself narrowly escaped the scaffold. He had married a second wife in 1656, who fifteen months after had died in childbirth; in 1663 he married a third time, and began the writing of *Paradise Lost*. This was published in 1667, the publisher agreeing to pay the author £5 down and a further £5 after the sale of each edition of 1300 copies. The published price was three shillings, and the poem was at first in ten books. In two years a second edition, now arranged into twelve books, was printed, and Milton's position as the greatest poet of his time was established. In 1670 there appeared his *History of Britain to the Norman Conquest*, and in the following year the continued vigor of his poetic faculty was shown in *Paradise Regained* and *Samson Agonistes*. In 1674, the last year of his life, he printed his *Epistolæ Familiares* and *Prolusiones Oratoriæ*. His death took place at his house in Bunhill, and he was buried in the church of St. Giles, Cripplegate.

Milton, a town of Norfolk county, Massachusetts, on the Neponset river, 8 miles s. of Boston. Fine granite is quarried here and there are a large chocolate and cocoa industry, paper mills, etc. Pop. 7924.

Milton, a town of Northumberland county, Pennsylvania, on the west branch of the Susquehanna, 13 miles above Sunbury. It has steel and iron works, car, knitting, and furniture factories, saw and planing mills, nail and nut and bolt works. Pop. 7460.

Miltwaste. See *Scale-fern*.

Milwaukee (mil-wą'kē), chief city and port of Wisconsin, on the west shore of Lake Michigan, which here receives the united rivers Milwaukee, Kinnickinnic and Menominee. The chief residence portion of the town occupies a high bluff overlooking the lake, above the busy valleys along the streams. Among the chief public buildings of the city are the federal building, court-house, city hall, post-office, two cathedrals, art gallery, free library and museum. The harbor is one of the best on the great lakes, and the largest vessels can come directly to the warehouses. Its transportation facilities have made Milwaukee one of the chief manufacturing and commercial centers of the lake region, the chief articles of its large commerce being grain, coal, flour and lumber. Its grain elevators have a very large capacity, and its flour mills are very important. Beer brewing is an immense industry, and there are also extensive industrial establishments producing iron, leather, agricultural implements, etc. Pop. 401,000.

Mimbar (mim'bär), the pulpit in a mosque. See *Mosque*.

Mime (mim), a kind of dramatic performance common among the ancient Greeks and Romans. Mimes appear to have originated among the Greek colonists of Southern Italy, and consisted first of extemporary representations at festivals of ludicrous incidents of common life, but were afterwards more artistically developed. The Roman mimes

were not unlike modern pantomime, but frequently indecent.

Mimeograph (mim'ē-u-graf), an instrument by which copies of any document may be transcribed and multiplied, through the use of a stencil made of thin paper prepared with paraffine or similar substance, which is put upon an ordinary typewriting machine, and receives the impression of the letters in the ordinary way.

Mimicry (mim'ik-ri), in biology, the name given to that condition or phenomenon which consists in certain plants and animals exhibiting a wonderful resemblance to certain other plants or animals, or to the natural objects in the midst of which they live. This peculiar characteristic is generally the chief means of protection the animal has against its enemies. It is well seen in the leaf-insects (Phyllium), also in the 'walking-stick' insects (Phasmidæ). Certain tropical butterflies reproduce the appearance of leaves so closely that even the parasite fungi which grow upon the leaves are imitated. So also a South American moth has a most accurate resemblance to a humming-bird; while the cacti of America and the euphorbias of Africa might easily be mistaken for each other, though widely different in structural characters. The theoretical explanation of this mimetic quality is attributed by recent biologists to purposes of self-preservation. Thus, the form or color which enables an animal to seize its prey easily and to protect its own life by deceptive resemblance to other objects, is conceived to be that form and color which is most likely to aid in its survival. The term is used in a merely metaphorical sense, and implies no act of volition on the part of the animal or plant, being simply a result of natural selection.

Mimnermus (mim-ner'mus), an ancient Greek poet and musician, who was probably born at Smyrna, and flourished from about 630 to 586 B.C. His poems were burned by the Byzantine monks, and only a few fragments belonging to a poem called *Nanno* have come down to us.

Mimosa (mi-mō'sa), a genus of leguminous plants, type of the subdivision Mimoseæ. See *Sensitive Plant.*

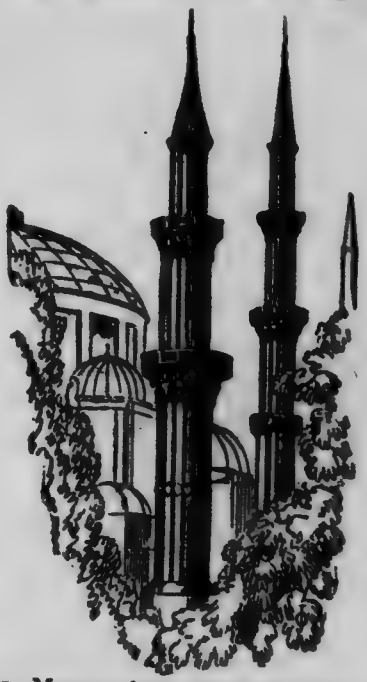
Mimulus (mim'u-lus), a genus of plants, nat. order Scrophulariaceæ. There are about forty species, natives of extratropical and mountainous regions of Asia, Africa, Australia and America. They have often handsome red, yellow, or violet flowers. *M. moschatus* is the musk plant of gardens. Others are favorite flowers.

Mimusops (mi-mū'sops), a genus of large, milky-juiced tropical trees common to both hemispheres. See *Bullet-tree.*

Mina (mi'na), among the Greeks, a weight of 100 drachmæ; also, a piece of money valued at 100 drachmæ. The Attic mina (sixty of which make a talent) was about $20, the Æginetan mina, $23.40.

Mina Bird. See *Grakle.*

Minaret (min'a-ret), a slender lofty turret rising by different stages or stories, surrounded by one or more projecting balconies, commonly attached to mosques in Mohammedan countries, and frequently of very elegant design. Minarets are used by the priests for summoning from the balconies the people to prayers at stated times of the day; so that they answer the purpose of belfries in Christian churches.



Minarets—Mosque of St. Sophia, Constantinople.

Minas Geraes (mē'nas je-rā'es), the most populous province of Brasil, bounded by Bahia, Espirito Santo, Rio de Janeiro, Sao Paulo and Goyaz; area, 221,861 square miles. It forms a high plateau varied by hills, and the climate is temperate and healthy, except along the swampy riversides. It is

rich in minerals; sugar-cane, cotton, millet, tobacco, and coffee are cultivated; timber is abundant. The chief town is Ouro-Preto. Pop. 3,594,471.

Mincio (min'chō; *Mincius*), a river of Italy, which flows from the south extremity of Lake Garda, and after forming the lake and marshes that surround Mantua falls into the Po, 8 miles below the city. The length of its course is 42 miles.

Mind (mind), a term that admits of no exhaustive scientific definition, but may be said to indicate, generally, the power possessed by each of us in virtue of which we know, think, feel and will. Limited to the individual, and varifiable only through individual experience, its phenomena have long been held to represent the immaterial as distinguished from the material world, *mind* and *matter* forming thus a direct antithesis. Yet we have no experience of mind as apart from matter, and many, instead of regarding mind as a separate entity, hold it rather to be akin to some function of the nervous system. The mental powers or functions are generally classed as three—intellect or understanding, emotion or feeling, and volition or will. Sometimes the term mind is specially given to the first (the intellect), which itself possesses several powers or capacities, such as perception, memory, reasoning, imagination. It is by the intellect that we acquire knowledge, investigate phenomena, and combine means to ends, etc., but the ultimate analysis of our mental powers gives different results with different investigators, the classification of the faculties of the mind being thus very various. The science that has specially to do with the investigation of mental phenomena is generally known as psychology. See also *Emotion*, *Imagination*, *Will*, etc.

Mindanao (mēn-da-nä'ō), one of the Philippine Islands, next to Luzon in point of size, about 300 miles long and 105 broad; area, 36,292 sq. miles. The Americans occupy the north portion of the island, the remainder being under native rulers, of whom the Sultan of Mindanao is the chief. All the country, except upon the seacoast, is mountainous, the volcano of Apo being 8819 feet high. Some coffee, cocoa and cotton are exported. The chief town is Zamboanga or Samboangan, a port and naval station at its western extremity. Pop. 499,601, of whom 252,940 are in a state of savagery.

Minden (min'den), a town of Prussia, province of Westphalia, on the Weser, 35 miles w. s. w. Hanover. It has a fine cathedral of the thirteenth century, and manufactures of tobacco, chemicals, etc. The French were defeated here during the Seven Years' war (1759) by an Anglo-Hanoverian army. Pop. 25,428.

Mindoro (mēn-dō'ro), one of the larger of the Philippine Islands, situated south of Luzon, from which it is separated by the Strait of Manila; about 110 miles long by about 53 broad. It is evidently volcanic, the climate is hot, and the rain almost incessant. Rice, cacao and wild cinnamon are among the products. Pop. 28,361.

Mine (min), in military language a subterranean passage dug under the wall or rampart of a fortification, or under any building or other object, for the purpose of blowing it up by gunpowder or other explosive. What are called *submarine mines* are now used in the defense of places liable to attack from a naval force. Such a mine consists of a charge of some powerful explosive inclosed in a suitable case, which is anchored at the bottom of the water, or at a suitable depth, and may be exploded at will by means of electricity so as to blow up a hostile vessel, or the mere contact of a vessel may cause it to explode. In ordinary language a mine is a pit or deep excavation in the earth, from which coal, metallic ores, and other mineral substances are taken. The pits from which stones are taken are called *quarries*. See *Mining*.

Mineralogy (min-er-al'o-jī), the science which treats of the properties of mineral substances, and teaches us to characterize, distinguish, and classify them according to their properties. It comprehends the study or science of all inorganic substances in the earth or on its surface. As distinguished from geology, mineralogy deals with the various mineral bodies as separate constituents of the earth's crust, and examines their properties as such, while geology treats them in the aggregate, as building up the crust of the earth, and as forming masses and presenting phenomena that have a history to be investigated. Minerals may be described and classified either in accordance with their chemical composition, their crystallographic forms, or their physical properties of hardness, fracture, color, luster, etc., or a combination of all, and thus various systems of classification have been adopted. Most minerals crystallize in definite forms, and this form is one of the chief characteristics of many mineral species. There are not a few, however, which are not distinctly crystalline, but are earthy or occur in masses; the latter exhibiting important varieties of structure, as *laminated*, *fibrous*, *granular*, *reniform*, *botryoidal*, etc.

Other distinctive characteristics are *color*, which, however, varies even in the same mineral; *luster*, the character of the light reflected from the surface, and described as *adamantine*, *vitreous*, *nacreous*, *greasy*, *silky*, etc.; *fracture*, or the character of the freshly-broken surface; *streak*, or the appearance and color of a furrow made in the mineral by a hard-tempered knife or file; and *hardness*, which is now determined by what is called Mohs' scale. In this scale certain minerals are represented by numbers from 1 to 10, viz. (1) *talc*, common laminated light-green variety; (2) *gypsum*, a crystallized variety; (2.5) *mica*; (3) *calcite*, transparent variety; (4) *fluorspar*, crystalline variety; (5) *apatite*, transparent variety; (5.5) *scapolite*, crystalline variety; (6) *potash feldspar*, white cleavable variety; (7) *quartz*, transparent; (8) *topaz*, transparent; (9) *corundum*; (10) *diamond*. To determine the hardness of a mineral, it is ascertained by experiment which of these it will scratch and which will scratch it; thus if a mineral will scratch fluorspar but not apatite, while the latter will scratch it, its hardness is between 4 and 5. Hardness is often one of the most conclusive tests in identifying minerals by their physical properties. Diaphaneity, refraction, polarization, electric properties, etc., are all distinguishing marks. In the classification of minerals, their chemical composition, though not to be regarded by itself, is of much importance. Among famous names in connection with mineralogy may be noted those of Werner, Haüy, Mohs, Dana, etc.

Mineral Tallow, or *Hatchettine*, a substance found in several places in Germany, Siberia, etc. It is soft and flexible, yellowish, resembling wax or tallow, often flaky like spermaceti, and composed of about 86 per cent. carbon and 14 per cent. hydrogen. The mineral is closely related to, if it be not identical with, native paraffine. Like other hydro[illegible], such as naphtha, petroleum, asphalt, etc., it appears to have resulted from the chemical alteration of organic matter.

Mineral Waters, is the term commonly applied to the spring waters that contain an unusual quantity of such substances as sodium, magnesia, iron, carbonic acid and sulphur; but it cannot be used in any absolute fashion. The most popular European springs are those of Aix-la-Chapelle, Wiesbaden, Baden-Baden, Carlsbad, Ahrweiler (Apollinaris), Friedrichshall, Buda-Pesth (Hunyadi-Janos), Vichy and Bath. There are many also in the United States, as at Saratoga, New York, in Arkansas, Virginia, Pennsylvania, and other States. The waters are usually drunk at an early hour before breakfast, and the curative effects are greatly aided by early rising, moderate exercise, mental relaxation, and complete freedom from all kinds of excess. It has not been found practical or useful to classify mineral waters under their chemical elements, but the attempt has been made, as where the springs are described as—salt, earthy, sulphur, iron, alkaline and alkaline-saline. Besides the substances which these terms indicate, the waters are frequently impregnated with carbonic acid gas, which is found to aid digestion while giving a pleasant stimulus to the general system.

Mineral Wool, a substance which is produced from the vitreous liquid slag of a blast furnace drawn out into fine fibers under pressure of steam. The slag, when in a molten condition, is driven by the steam from the furnace through a crescent-shaped aperture, and suddenly cools into long fibrous filaments. The thin, glassy, thread-like substance thus produced is useful as a non-conductor of heat, and it has, therefore, been largely employed as a covering for boilers and steam pipes, to prevent the freezing of water in pipes, etc.

Minersville, a borough in Schuylkill County, Pennsylvania, on the west branch of the Schuylkill River, 4 miles W. of Pottsville. It is in an important anthracite region, coal operations being the chief basis of its prosperity. Pop. 7240.

Minerva (mi-nér'va), a daughter of Jupiter, and one of the great divinities of the ancient Romans. She was looked upon as the patroness of all arts and trades, and her annual festival, called Quinquatrus, lasted from the 19th to the 23d of March inclusive. This goddess was believed to protect warriors in battle, and to her was ascribed the invention of numbers, and of musical instruments, especially wind-instruments. At Rome a temple was built for Minerva by Tarquin on the Capitol, where she was worshiped along with Jupiter and Juno; and there was also a temple on the Aventine dedicated to herself alone. This deity is supposed to be of Etruscan origin, and her character has much in common with the Greek goddess Athena (which see).

Mingrelia (min-grē'li-a), a district of the Caucasus, in Russia, since 1867 part of the province of Kutais; area, 2100 square miles. The Mingrelians are closely related to the Georgians. The country in this region is mountainous but fertile, and the chief products are corn, wine, oil, etc. Pop. 241,000.

Minho (mēn'yō), more fully ENTRE DOURO E MINHO, a province of Portugal, bounded on the north by the river Minho, south by the Douro, and west by the Atlantic; area, 2706 square miles. The surface is generally mountainous. The most important products are wine, flax, cork and oranges. Pop. 1,173,106.

Minho, a river of Spain and Portugal, in the northwest angle of the peninsula; length, 130 miles.

Miniature (min'i-tūr), a small painting, especially a portrait, executed with delicate care, chiefly upon ivory, also upon vellum, paper, etc. The term is from the Italian *miniatura*, originally applied to a small painting, such as those formerly used to adorn manuscripts, from the common use of *minium* or vermillion in the ornamentation of the illuminated manuscripts in the middle ages. The art of miniature painting was carried to its highest perfection, chiefly in France, during the eighteenth century.

Minim (min'im), in music, a note equal in duration to one-fourth of a breve, and one-half of a semibreve.

Minim Friars, or MINIMS (from L. *minimus*, least), an order of reformed Franciscans, founded by St. Francis of Paula in Calabria in 1473. Their dress is black, and, like that of the Franciscans, provided with a scourge. They belong to the mendicant orders, and possessed, in the eighteenth century, 450 converts in thirty provinces.

Minimum Thermometer, a self-registering thermometer marking the lowest fall of the mercury. See *Thermometer*.

Mining (min'ing), is the term applied to the underground engineering process by which minerals are excavated and brought to the earth's surface. That this process in a rude form was known to the ancients is shown by references in the book of Job, the records of the Phœnicians and Egyptians, and the signs of supposed Roman excavations found in Britain. The first important historical record of mining operations in England is found in the charter to dig for coals, granted in 1259 by Henry III to the freemen of Newcastle-on-Tyne. Then, again, in the reign of Henry VII a commission was empowered to dig and search for metals; while during Elizabeth's reign German miners were induced to visit England, and extensive privileges granted to the 'Society of Mines Royal.'

Begun thus early, the development of mining has been greatly advanced by the introduction of gunpowder and dynamite for blasting purposes; by the use of steam engines for pumping water from the mine and bringing material to the surface; and by the aid of improved ventilation, which now enables mines to be carried to deeper levels. In describing the modern methods of mining it is found convenient to draw a distinction between metal and coal.

Metalliferous mining has to deal with a mineral which is found in *lodes* or *veins* irregularly imbedded in rock fissures, the trend of which is uncertain and the thickness variable. In preparing to excavate this irregularly distributed mineral two shafts are sunk in the vicinity of the lodes, one of which is used for pumping and ventilating the mine, the other for drawing the material to the surface. From these two shafts horizontal galleries are driven at distances of 10 or more fathoms apart, an additional gallery being driven at intervals of 10 or 15 fathoms as the mine is increased in depth. The galleries are driven as far as possible on the course of the lode, and if the lode is going down on a slope, the galleries in such case are not vertical above one another. These galleries are connected by vertical passages or 'winzes'; and in this way they are ventilated, and the material to be excavated is divided into rectangular blocks. The metal ore after being excavated is broken up by the miner, put into a barrow, wheeled to one of the main galleries, thence transported in cars drawn on rails by men, mules, or engines, to the main shaft. There it is hoisted to the surface in an iron 'kibble' or a wooden 'skip' which travels up and down in guides fixed to the side of the shaft.

Access to many metalliferous mines is still obtained by means of ladders fixed almost vertically in the sides of the shaft. This toilsome method is averted in some mines by what is called a 'man-engine,' which consists of two rods with platforms attached which move up and down reciprocally the distance between two platforms, the miner ascending or descending from the platform on one rod to that of another alternately. Besides the shafts there is usually an entrance to the mine called an 'adit' or 'day-level' which is driven straight into the mine from the nearest convenient depression or valley and is mainly used for purposes of drainage. Adits are sometimes of great length.

Coal mining has to deal with a mineral which is deposited in *seams* or *beds*, sometimes nearly horizontal, at other times nearly vertical. These seams are interstratified with layers of sandstone, shale, clay, etc., and when the beds are tilted the coal has been frequently found

outcropping at the surface. In the chief coal fields this outcrop coal has been exhausted, and it is now found necessary to approach the coal seams by means of shafts, of a rectangular or circular shape, sunk into the earth. Before sinking the shaft it is expedient to bore down through the strata in order to test the thickness and direction of the coal-measures. The bore-hole is usually begun by digging a small pit about 6 feet deep, and the old method was to pierce the rock by means of a cutting tool attached to long rods and worked by a lever with hand-power. Various improvements on this slow method have recently been made, as where hydraulic or steam power is used to drive the boring-rods, and diamond drills employed instead of the steel tool. (See *Boring.*) When this boring test has been found satisfactory the shaft is then sunk. One shaft not unfrequently intersects a number of workable coal-seams, these being generally separated by shale, sandstone and limestone. Seams of coal vary in thickness from 2 inches up to 30 feet or even much greater. The coal having been reached, the mining engineer has to devise the safest and most economical method of cutting the coal and sending it to the surface. There are two commonly adopted methods of working out coal-seams, viz., the 'pillar-and-stall' or 'stoop-and-room' system, and the 'longwall' or 'longwork' system. The former method consists in excavating 'rooms' in such a manner as to divide the coal into rectangular pillars or 'stoops.' In the early days of coal-mining the stalls were made large and the upholding pillars left small, no attempt being afterwards made to recover the coal in these pillars. When the floor of the mine was of soft clay or lime the weight of the roof drove the pillars down, causing the floor to rise in the center between the pillars, and establishing an undulating movement throughout the underlying strata called by miners 'the creep.' To prevent this the coal is now left in wide barriers or 'pannels' which divide one part of the workings from another. The pillars of coal which are now left are recovered by a second operation, which consists in cutting them out after a division or pannel has been excavated to its boundary, or by working them out when the stills have been driven the length of two or three pillars. These pillars are, in most cases, about 20 yards square, and in one pannel of the mine there are often 600 such pillars. In the 'longwall' method the miner cuts into, or 'holes' into, the underpart of the coalbed for two or three feet, and then, with the aid of wedges driven in atop, he loosens and extracts the mass of

Section of Part of the Devon Great Consols Copper Mine.
The parts lightly shaded indicate where the mineral has been removed.

coal which has been 'holed.' By this system the entire coal-seam is at once extracted, while the empty space or 'goaf' is filled in with waste material as the work advances. Timbers are also largely used to sustain the roof of mined-out chambers and replace coal pillars when removed, and the quantity of timber thus used in the mines of the United States forms one of the large strains on our forest resources, the mine timbers annually used being estimated at about two and a half billion feet.

One of the most important matters connected with coal mining is *ventilation*. To facilitate this there are two openings into the mine, which are technically called the 'intake' and 'return' air-passages. The necessary supply of pure air is maintained either by the natural heat of the mine causing a constant inrush of cold air; by pumps or fans forcing the air down the 'downcast' shaft or drawing it up the 'upcast' shaft; or by furnace ventilation. This latter mode is considered the most efficient. The furnace by its heat causes a constant current up the upcast shaft, thus drawing the vitiated air away from the workings. Connected with ventilation is the dangerous accumulation of fire-damp, which may take place in a mine, to guard against which safety-lamps have been introduced. See *Fire-damp*, *Safety-lamp*.

The pumping of water out of the workings is an essential part of mining, surface water often seeping in, in large quantities. Some of the largest pumping engines raise from 2000 to 3000 gallons of water per minute.

Minion (min'yun), a size of type between brevier and nonpareil. See *Printing*.

Minister (min'is-tèr), a designation in general use in the United States (and less widely in Britain) applied to a preacher or clergyman.

Ministers (min'is-tèrz), the name applied in politics to the chief servants of a state in the administration of its affairs, and the chief representatives of a country at a foreign court. (See *Ministers, Foreign.*) In Britain the former are known collectively as the *ministry*, and the head of the administration is called the *prime minister* or *premier*. The number of ministers who hold cabinet rank varies in different administrations, but it invariably includes the first lord of the treasury, lord chancellor, lord president of the council, the secretaries of state for home, foreign, war, colonial and Indian affairs, the chancellor of the exchequer, and the first lord of the admiralty. (See *Cabinet.*) All the ministers are appointed by the prime minister, subject to the approval of the crown. When an appointment as minister with emoluments is accepted by a member of the House of Commons he must vacate his seat and seek reëlection; but when he merely moves from one ministerial office to another no reëlection is necessary. The ministry, including the officers of the household, number nearly seventy persons, most of whom receive salaries. When the ministry is defeated in the House of Commons on an important question of policy it is customary for the prime minister to tender his resignation to the sovereign, or crave leave to appeal to the country. Should the decision of the House of Commons be endorsed by the country at a general election it is usual for ministers to resign, to admit of another administration being formed before the new Parliament meets. On the resignation of a ministry it is usual for the sovereign to send for the leader of the opposition, who is asked to form a ministry in place of that which has resigned. No such institution exists in the United States, but a responsible premier and ministry exists in various European nations, similar to that of Britain. The American diplomats abroad all formerly bore the title of Minister, but those sent to the leading countries are now known as ambassadors. There is no official in the United States similar to the European premier or prime minister.

Ministers, Foreign, are those accredited representatives which one country sends to another. Generally they are divided into three classes. The highest in rank is the *ambassador extraordinary*, who can claim to represent his state or sovereign in his own person, and receive honors and enjoy privileges accordingly. The *legates* and *nuncios* of the pope also belong to this class. *Envoys extraordinary*, *internuncios*, and *ministers plenipotentiary* belong to the second class, and neither hold the same degree of power nor receive the same distinction as the former. The third class includes *ministers resident*, *envoys* and *chargés d'affaires*, the last being sometimes regarded as a fourth class. Persons who are sent merely to conduct the private affairs of their monarch or his subjects in a foreign place are called *agents* or *residents*; and where they are occupied chiefly with subjects of a commercial character such as reporting trade conditions, they are called *consuls*. When the foreign minister is accredited directly to the sovereign of a state he is considered inviolable, and he is freed

from taxes and territorial restrictions. See *Ambassador, Envoy, Consul.*

Minium (min'i-um), the red oxide of lead, often designated *red lead*, and commonly used as a pigment for ordinary purposes.

Miniver (min'i-vēr), the Siberian squirrel, which has fine white fur; also the fur itself.

Mink, an American and European quadruped, allied to the polecat (*Putorius Vision*). It is semiaquatic, burrowing on the banks of rivers and ponds, living on frogs, crayfishes and fishes.

Minneapolis (min-nē-ap'o-lis), the first city of Minnesota in population and importance, the county seat of Hennepin County, on both sides of the Mississippi, at the Falls of St. Anthony, in close contiguity to St. Paul, the suburbs of the two cities meeting. It is regularly laid out with avenues from 80 to more than 100 feet wide running east and west, having double rows of trees on each side. The public buildings include the courthouse, the University of Minnesota (chartered in 1851), the Augsburg Theological Seminary, Lutheran (opened in 1869); a handsome Free Public Library and Art Gallery. There are numerous fine schools, churches, colleges, banks, opera houses, theaters, etc. The city covers an area of 54 square miles, and has many parks, of which Minnehaha, about 5 miles from the center of the city, embraces the famous Minnehaha Falls. There are a number of lakes within the city. With its magnificent water power, this city ranks as one of the leading manufacturing cities of the country. In flour and lumber products it is the foremost city in the world, and it is one of the largest wheat markets in the world, more than 113,000,000 bushels of wheat having been received in the course of a year. The other important industries are the manufacture of engines, boilers, agricultural implements, carriages, wagons, bicycles, machinery, foundries and pork packing. It is a great railroad center, being on the Burlington route; Chicago and Northwestern; Chicago Great Western; Great Northern; Minneapolis, St. Paul and Sault Ste. Marie; North Pacific; St. Paul and Duluth; Minneapolis and St. Louis, and other railroads. The City and County Building stands a monument of the enterprise of the city; it is a most beautiful structure and was built at a cost of $3,500,000. The Masonic Temple, Public Library, Chamber of Commerce, Metropolitan Life and other buildings add to the architectural beauties. Pop. 323,476.

Minnesingers (min'e-sing-ers; G. Ger. *Minne*, love), a class of German lyric poets of the twelfth and thirteenth centuries, so called from love being the chief theme of their verse.

Minnesota (min-nē-sō'ta), one of the United States of America, bounded north by Canada, east by Lake Superior and Wisconsin, south by Iowa, and west by the Dakotas; area, 84,682 sq. miles. The chief towns are Minneapolis, and the capital, St. Paul. This state occupies the summit of a central plateau formed by the coterminous basins of the Mississippi, the St. Lawrence and Lake Winnipeg. The surface is generally an undulating plain, with a general slope southeast towards the basin of the Mississippi, which, with its affluents, drains about two-thirds of the State. The Red River of the north, which forms part of the west boundary, also receives a part of the drainage, and part is carried by Rainy Lake River to the Lake of the Woods, part to Lake Superior. Lakes are numerous, including Leech Lake, Red Lake, Vermilion Lake, Mille Lacs, and part of Lake of the Woods and Rainy Lake. Iron and copper are among the chief minerals, the iron yield of the Lake Superior region being very large. Peat is seemingly inexhaustible in some parts of the State, and is used to some extent as fuel. Building stones include granite, gneiss, limestone, etc. In this State is the red pipestone deposit, formerly used by the Indians for their pipes. The soil for the most part is good, and the Red River valley is considered the finest wheat-growing district in the State. A large forest known as the 'Big Woods' extends over the center of Minnesota for the length of 100 miles and a breadth of 40 miles, and the country, especially above lat. 46°, is well wooded with pine, spruce, oak, beech, elm, maple, while the prairies have been planted with 20,000,000 trees by the aid of State bounties. The climate is on the whole excellent, the winters, though cold, being clear and dry. Minnesota has a great diversity of valuable natural resources. Its iron-ore deposits are the richest in the country; in 1909 it ranked third among the states in the production of wheat; and its timber lands are extensive. The iron mines do not contribute directly to the state's manufactures, because the ore is shipped to eastern blast furnaces. The wheat fields and forests, however, furnish the raw materials for the two most important industries of the state. Other industries are meat packing, dairying and foundry and machine shops. The transportation facilities, both rail and water, are excellent. By the State constitution a por-

tion of land is set apart in each township to provide a perpetual education fund. The State university is at Minneapolis. Minnesota was explored in 1766; became part of the United States in 1783; the Indian title to its lands was extinguished in 1838; its territory was organized by act of Congress in 1849; and in 1858 it was admitted to the Union. Pop. 2,075,708.

Minnesota River, a river in the United States, which flows through Minnesota and falls into the Mississippi 5 miles above St. Paul; length, 470 miles.

Minnow (min'ō; *Leuciscus phoxinus*), a species of fish belonging to the same genus as the carp. They swim in shoals, seldom exceed 3 inches in length, and make excellent bait for trout. In the United States various small fish receive this name.

Mino Bird. See *Grakle.*

Minor (mī'nur), a person of either sex under age, who is under the authority of his parents or guardians, or who is not permitted by law to make contracts and manage his own property. See *Age.*

Minor, in music. See *Major.*

Minorca (mi-nor'ka; Spanish, *Menorca*), an island in the Mediterranean, belonging to Spain, the second largest of the Balearic group; area, 260 sq. miles. It is situated E. N. E. of Majorca, from which it is separated by a strait 27 miles broad. The surface is mountainous, the coast rugged, and the best harbor is at Port Mahon, the capital of the island. Mount El Toro, in the center, attains the height of about 5000 feet. The soil is not generally fertile, yet a considerable quantity of wheat, oil, wine, hemp, flax, oranges, etc., are produced. Iron, copper, lead and marble are plentiful. During the greater part of the eighteenth century Minorca belonged to the British, who finally ceded it to Spain at the Peace of Amiens (1802). Pop. 371,512.

Minorites. See *Franciscans.*

Minor Planets. See *Asteroids* and *Planets.*

Minor Prophets, THE, so called from the brevity of their writings, are twelve in number, viz., Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah and Malachi. Their prophecies are found in the Hebrew canon.

Minos (mī'nos), in Greek mythology, a ruler of Crete, said to have been the son of Zeus and Europa, and a brother of Rhadamanthus. During his lifetime he was celebrated as a wise lawgiver and a strict lover of justice, and after his death he was made, with Æacus and Rhadamanthus, one of the judges of the infernal world.

Minot (mī'not), a city, county seat of Ward County, North Dakota, situated on the Mouse River. It is a shipping point for grain and coal. Pop. 6188.

Minotaur (min'u-tar), in Greek mythology, a monster fabled to have had the body of a man with the head of a bull, and to have fed on human flesh, on which account Minos shut him up in the labyrinth of Dædalus, and at first exposed to him criminals, but afterwards youths and maidens yearly sent from Athens as a tribute. He was slain by Theseus.

Minsk, a town of Russia, capital of government of same name, on the Svislotch, 430 miles southwest of St. Petersburg. It is the see of a Greek archbishop and of a Roman Catholic bishop, and contains two castles. It has some manufactures and a considerable trade. Pop. 105,000.—The government, which has an area of 35,283 sq. miles, has extensive forests and great stretches of marsh or swamp. Pop. (1906) 2,581,400.

Minster (min'stèr), anciently the church of a monastery or convent, afterwards a cathedral, as York Minster.

Minstrel (min'strel), a singer and musical performer on instruments. In the middle ages minstrels were a class of men who subsisted by the arts of poetry and music, and sang to the harp or other instrument verses composed by themselves or others. The person of the minstrel was sacred; he was 'high placed in hall, a welcome guest.' So long as the spirit of chivalry existed the minstrels were protected and caressed, but they afterwards sank to so low a level as to be classed, in the reign of Queen Elizabeth, with beggars and vagabonds.

Mint, the name given to several herbaceous aromatic plants of the genus *Mentha*, nat. order Labiatæ. They are nearly all perennial, having square stems which bear opposite and simple leaves; they are widely distributed throughout temperate regions; and they abound in resinous dots which contain an essential oil. Mint has an agreeable odor, and partakes in the highest degree of tonic and stimulating properties. Spearmint (*M. viridis*) is generally used, mixed with vinegar and sugar, in sauce. Peppermint (*M. piperita*) yields the well-known stim-

ulating oil of the same name. Pennyroyal (*M. Pulegium*) is used for the same purposes as peppermint.

Mint, the place where a country's coinage is made and issued under special regulations and with public authority. In England there was formerly a mint in almost every county; the sovereign, barons, bishops, and principal monasteries exercised the right of coining; and it was not till the reign of William III that all the provincial mints were abolished. The present mint on Tower Hill, in London, was erected between the years 1810 and 1815. In former times the coinage was made by contract at a fixed price. The English mint supplies the whole of the coinage of the British Empire, except Australia and the East Indies, which are supplied from branch mints at Sydney, Melbourne, Calcutta and Bombay. In the United States the original mint was established at Philadelphia, and this is still the principal mint, there being others at Denver, San Francisco and New Orleans. See *Coining*.

Minuet (min'ū-et), a slow, graceful dance said to have been invented in Poitou, in France, about the middle of the seventeenth century, performed in ⅜ or ⅝ time. The term is also applied to a tune or air to regulate the movements in the dance, or composed in the same time.

Minus (mī'nus), in algebra, the term applied to the negative or subtractive sign —, which, when placed between two quantities, signifies that the latter is to be taken from the former: thus $a - b$ (called *a minus b*) signifies that b is to be subtracted from a. Quantities which have the sign *minus* before them are called negative of *minus* quantities; as, $-ay$, $-5od$.

Minute (min'it), a division of time and of angular measure. As a division of time it is the sixtieth part of an hour. As a division of angular measure it is the sixtieth part of a degree. In astronomical works minutes of time are denoted by the initial letter *m*, and minutes of a degree or of angular space, by an acute accent (′).

Minute Men, in the American Revolutionary war, the militia of New England, who were expected to be ready for service at a minute's notice.

Miocene (mī'ō-sēn; Gr. *meiōn*, less, *kainos*, recent), in geology, the name given by Sir Charles Lyell to a subdivision of the tertiary strata, lying between the Eocene and Pliocene. The terms *Miocene* and *Pliocene* are comparative, the first meaning less recent and the other more recent. The Miocene strata contain fossil plants and shells which indicate warm climate. The mammals are important, and foreshadow the animal life of the present day.

Miösen (myew'sen), the largest lake in Norway, about 40 miles N. E. of Christiania. It is 62 miles long and about 9½ miles in greatest breadth, and its waters are carried by the Vormen to the Glommen.

Miquelon (mik-lōn), an island in the Atlantic Ocean, near the southern coast of Newfoundland, belonging to France. The southern part, called Little Miquelon, was once a separate island, but since 1783 has been connected with it by the elevation of a sandbar. The island has been in the possession of the French since 1763. See *Pierre, St.*

Mir, the Russian commune, consisting of the inhabitants of one or more villages, who are as a community owners of the surrounding land, and redistribute the same to the members from time to time.

Mirabeau (mē-rā-bō), Gabriel Honoré Riquetti, Comte de, a French statesman, son of Victor Riquetti, marquis de Mirabeau, born in 1749 at Bignon, near Nemours; died at Paris, in 1791. At an early age he manifested extraordinary intelligence; but his youth was a stormy and licentious one, so much so that on several occasions he was imprisoned by his father

Mirabeau.

under a *lettre de cachet*. It was during an imprisonment at Vincennes, which lasted three years and a half, that he wrote his *Lettres à Sophie*, *Lettres de*

Cachet and *L'Espion Dévalisé*. On his release from this prison he lived for some time in Holland and England, returning to France in 1785. On the assembling of the states-general in 1789 Mirabeau, elected for Aix, soon became prominent. When the king required the *tiers état* to vote apart from the other two orders it was Mirabeau who counseled resistance, demanded the withdrawal of the troops, consolidated the National Assembly, and defied the king's orders. For some months he continued to lead, but he soon found that the members of the assembly were mostly impracticable and inexperienced men, whose chief function was to discuss an ideal constitution. As a practical statesman Mirabeau desired action, and for this reason he attempted to form alliances with Lafayette, the Duke of Orleans, Necker, and finally with the queen. Correspondence with the latter was maintained through La Marck, and he received a subsidy from the royal party. No practical result followed from this secret alliance, for the queen rejected Mirabeau's counsel and suspected his methods of government. Whether he might ultimately have been able to guide the revolution into peaceful ways has always been a matter of conjecture to historians, but this possibility was prevented by his death in 1791. This was regarded as almost a national calamity, and the people buried him with splendid pomp in the Pantheon.

Mirabilis (mi-rab'i-lis), a genus of plants, nat. order Nyctaginea, one species of which, *M. jalapa*, is well known in gardens as 'the marvel of Peru.' It is a native of South America.

Miracle (mir'a-kl; Latin, *miraculum*, a wonder, a prodigy; in the original Greek *sêmeion*, a sign, *teras*, a wonder or prodigy), a suspension of, or deviation from, the known laws of nature, brought about by the direct interference of a supreme supernatural being. It is in its nature, as the term implies, an occurrence which is strange, marvelous, inexplicable, and is usually connected with some ulterior moral purpose. By the elder theologians a miracle was conceived to be the triumph of the Divine Will over the work of His hands and the laws of His making. In modern exegesis, however, the miraculous element is not considered to give evidence of opposing forces. On the contrary, a miracle is explained as a manifestation of the Divine Power working through laws and by methods unknown to us, and which, upon a higher plane, are altogether natural and orderly.

Miracle Plays, a sort of dramatic entertainments common in the middle ages, in which the subjects were taken from the lives of saints and the miracles they wrought. They were originally performed in church, but latterly outside, in market-places and elsewhere. In England they were first produced in the twelfth century. They differed from the mysteries mainly in subject. See *Mysteries*.

Mirage (mi-rāzh'), an optical illusion, occasioned by the refraction of light through contiguous masses of air of different density; such refraction not unfrequently producing the same sensible effect as direct reflection. It consists in an apparent elevation or approximation of coasts, mountains, ships, and other objects, accompanied by inverted images. In deserts where the surface is perfectly level a plain thus assumes the appearance of a lake, reflecting the shadows of objects within and around it. The mirage is commonly vertical, that is, presenting an appearance of one object over another, like a ship above its shadow in the water. Sometimes, however, the images are horizontal. *Looming* is a phenomenon of the same nature, in which the objects appear to be lifted above their true positions, so that an observer sees objects which are beyond the horizon. The cause in both cases the same, for while the mirage is produced in most instances by refraction from the desert sand, looming is occasioned by reflection from the sky. The phenomenon called Fata Morgana, which is sometimes seen on the Calabrian coast, is a kind of mirage. By it men and animals apparently of immense size may sometimes be seen presented in the air.

Miramichi (mi-ra-mi-shē'), a bay and river of New Brunswick, Canada. The bay is 20 miles wide at its entrance and runs 21 miles inland. The river falls into the bay after a N. E. course of about 90 miles, of which 40 are navigable for large vessels.

Mirandola (mi-rān'do-lā), GIOVANNI PICO DELLA, surnamed the *Phœnix*, born in 1463; died in 1494, was the youngest son of Gianfrancesco della Mirandola, of the princely family of Mirandola. He studied at Bologna and at different towns of Italy and France. He had few equals as a finished scholar.

Miribel (mir-i-bel), MARIE FRANÇOIS JOSEPH DE, soldier, was born at Montbonnet, Department of the Isère, France, in 1831. He was at the siege of Sebastopol, and in the Italian campaign in 1850; served under Bazaine in Mexico, and during the siege of Paris by the

Germans was conspicuous for his gallantry. In 1890 he was made chief of the General Staff of the Army. By the French he was regarded their greatest living strategist. The efficiency attained by their army in recent years is attributed to his masterly direction. He died in 1893.

Mirror (mir'ur), a smooth surface capable of regularly reflecting a great proportion of the rays of light that fall upon it. The mirrors used by the ancients, and more especially by the Etruscans, were made of thin polished bronze, either set in a case or fitted with a handle. Small metal mirrors were also used by the Greeks and Romans, and specimens brought by the latter have been found in Cornwall. In England during the middle ages the gentlewomen carried small circular polished metal mirrors attached to their girdles. These were sometimes also fitted into cases with a lid, the material of which was of gold, silver, or ivory, richly designed and ornamented. The making of glass mirrors, which had their backs silvered with an amalgam of mercury and tin, was early practiced by the Venetians, and by strict prohibitive statutes they were long able to keep their workmen in Venice and enjoy a monopoly of the trade. The manufacture of mirrors of this kind was first introduced into England early in the seventeenth century. The older method of silverizing mirrors by the amalgam of mercury and tin occupied usually a period of weeks, and it has been generally given up. In 1835 Liebig observed that by heating aldehyde in a glass vessel along with an ammoniacal solution of nitrate of silver a coating of brilliant metallic silver was left upon the glass. This has now been made use of in mirror making by what are known as the hot and cold processes. In the hot process the glass is first sensitized with a solution of tin, which is then rinsed off and the plate laid upon a flat, double-bottomed metal table heated by steam to about 100° Fahr. In this position a solution of nitrate of silver, ammonia and tartaric acid in distilled water is poured over it; and if the temperature is kept uniform a thick deposit of silver will be formed in about half an hour. When the silver layer is carefully wiped this process is repeated. In the cold process a solution of nitrate of silver, nitrate of ammonia, and caustic soda dissolved in water is mixed with a solution of loaf-sugar, vinegar and water. This is poured quickly and evenly over the glass plate, and the silver is precipitated in a few minutes, after which it is washed and the process repeated. The silvering is then protected by a coating of shellac or copal varnish. More recently a solution of bichloride of platinum is applied to the surface of the glass and precipitated with oil of lavender in the manufacture of the cheapest mirrors. Mirrors may be plane or spherical, and in the latter case they may be either convex or concave. The optical principles involved in reflection from mirrors are simple.

Mirzapur (mēr-zā'pōr), a city of India, capital of a district of same name, in the N. W. provinces, on the Ganges, 56 miles below Allahabad and 45 above Benares, was formerly a place of great trading importance. Pop. 32,332.

Misdemeanor (mis-de-mē'nur), a term applied to all crimes and offenses, whether of omission or commission, less than felony. Misdemeanors are of two kinds—either those which exist at common law, *mala in se*, or those created by statute.

Miserere (miz-e-rē're; Latin, 'have mercy'), the name of a psalm in the Roman Catholic Church service, taken from the fifty-first Psalm, beginning in the Vulgate, '*Miserere* mei, Domine' ('Pity me, O Lord'). The name is also applied to a projecting bracket on the under side of a hinged seat in a stall of a church; or to the seat and bracket together.

Mishawaka (mish-a-wą'kā), a city of St. Joseph Co., Indiana, on the St. Joseph River, 4 miles E. of South Bend. Its manufactures include gas engines, windmills, rubber and woolen footwear, automobile tires, transmission machinery, trunks, etc. Pop. 11,886.

Mishna (mish'na), a collection or digest of Jewish traditions and explanations of Scripture, preserved by tradition among the doctors of the synagogue, till Rabbi Jehudah, surnamed the *holy*, reduced it to writing about the end of the second century A.D. The Mishna is divided into six parts: the first relates to agriculture; the second regulates the manner of observing festivals; the third treats of women and matrimonial cases; the fourth of losses in trade, etc.; the fifth is on oblations, sacrifices, etc.; and the sixth treats of the several sorts of purification. See *Talmud*.

Misiones (mē-si-ō'nās), a fertile territory of the Argentine Republic, between the Uruguay and Paraná; area, 11,282 square miles. Pop. (1904) 38,775.

Miskolcz (mish'kolts), a town in Hungary, 113 miles northeast of Budapest. The inhabitants are

chiefly employed in agriculture. Pop. (1910) 51,450.

Misletoe. See *Mistletoe.*

Mispickel (mis'pik-el), arsenical pyrites, an ore of arsenic, containing this metal in combination with iron, sometimes found in cubic crystals, but more often without any regular form.

Misprision (mis-pri'shun), in law, any high offense under the degree of capital, but nearly bordering thereon. Misprision is contained in every treason and felony. *Misprision of felony* is the mere concealment of felony. *Misprision of treason* consists in a bare knowledge and concealment of treason, without assenting to it. Maladministration in offices of high public trust is a *positive misprision.*

Missal (mis'al), in the Roman Catholic liturgy, the book which contains the prayers and ceremonies of the mass. (See *Mass.*) The greater part of these prayers and ceremonies are very ancient, and some of them have come down from the times of the Popes Gelasius I (end of fifth century) and Gregory the Great (end of sixth century); some are even older. The Missal was revised by the Council of Trent, its adoption by the whole Catholic Church demanded by Pius V in 1570, and in this form it is still retained. In England before the Reformation there were missals of the Sarum use, Lincoln use, Bangor use, etc. Before the invention of printing the writing of missals ornamented with illuminated ornaments, initials, miniatures, etc., was a branch of art raised to high excellence in the monasteries.

Missel-thrush. See *Thrush.*

Missing Link, the link between man and the lower animals much sought for, but not yet found. The nearest approach to it lies in the discovery of certain skeletal remains which appear to occupy a place between man and the higher apes. The most significant of these are some fossil bones found by Dr. Dubois in Java in 1891 and named by him *Pithicanthropus.* They consist of a cranium and some other bones, and seem to stand midway between man and the anthropoid apes. While probably human, some doubts of their true position are entertained.

Missions, MISSIONARIES. The first Christian missionaries were the apostles, and by them and their successors Christianity was in the course of a few centuries spread over all parts of the Roman Empire. In some parts, as in Britain, it gave way again before the Germanic invaders of the fifth and sixth centuries, and some of the most noted missionaries were those who reintroduced their faith among the German tribes. St. Augustine or Austin, who was sent by Gregory the Great with forty associates to preach the gospel among the Saxons of Britain at the end of the sixth century, was the first of this missionary group. Britain in its turn sent forth missionaries, such as St. Boniface, 'the apostle of Germany.' Germany also sent out the missionaries who converted Denmark, Sweden and Norway, Poland, Hungary and Bohemia. The Crusades opened up new spheres for missionary efforts in the East, and two religious orders founded at the beginning of the thirteenth century, the Dominicans and Franciscans, devoted themselves to preaching among the Musulmans. Others advanced as far as Tartary, Tibet and China, but the persecutions there became so violent that those countries had to be abandoned. A new impulse was given to missions by the discovery of the New World. When the way had been prepared by the Spanish and Portuguese armies a crowd of friars of all orders set out for the West Indies, Mexico, Peru and Brazil, to spread Catholicism; but very few, like Las Casas, protected the natives from rapacity or preached Christianity by their conduct. The powerful order of the Jesuits, which was founded in the sixteenth century, turned their attention to the East, and the celebrated Francis Xavier, a member of the order, proceeded to India, where his efforts were crowned with success. From India Christianity was introduced into Japan, where it had to contend against terrible persecutions, before which the missionaries were compelled to retire. Father Ricci, another Jesuit, penetrated to Peking, and succeeded about the end of the sixteenth century in gaining a firm footing. At the beginning of the seventeenth century some Dominican missionaries made Tonquin and Cochin China the center of their efforts, and pushed out thence into all the neighboring countries with considerable success. In 1622 Gregory XV gave a better organization to the Roman Catholic missions by the foundation of the Propaganda, and they are now very widely spread and carried on with much energy.

The earliest Protestant foreign mission appears to have been one which was established in Brazil in 1555. Gustavus Vasa, King of Sweden from 1523 to 1560, towards the close of his reign sent forth a mission to convert the Laplanders. Shortly after the settlement of New England in 1620 John Eliot took a deep in-

FACADE OF OLD MISSION AT SANTA BARBARA, CALIFORNIA

terest in the condition of the North American Indians, and . 1646 began a regular mission among that people. But these were only isolated trivial efforts, and it was not until the eighteenth century that the true missionary spirit awoke. The English took the lead in this movement, but were speedily followed by Danes and Germans, especially the Moravian Brethren. In England in 1701 an association was formed for mission purposes, called the Society for the Propagation of the Gospel in Foreign Parts, in connection with the Church of England. John Wesley labored from 1735 to 1737 as a missionary of this body in Georgia. Its operations are chiefly devoted to the British colonies. The first mission of the Wesleyan Methodists was sent out in 1786 to the West Indies. They have now stations in India, Ceylon, China, Africa, etc. The Baptist Missionary Society, the operations of which have been crowned with remarkable success, was founded in 1792, in consequence of the exhortations of William Carey, who himself went as missionary to India. The two most distinguished missi naries belonging to this society besides Carey were Marshman and Ward. The society afterwards founded stations in China and Japan, Palestine, the West Indies, Equatorial Africa, and in some European states. The London Missionary Society was founded in 1795 by evangelical Christians of different denominations. Tahiti was the island which received the first band of missionaries (March, 1797). China and the East Indies, Madagascar, South and Central Africa, the West Indies, etc., followed. The most celebrated missionary to the Pacific was John Williams, and Moffat and Livingstone did good work in the African field. The Scottish Missionary Society was organized at Edinburgh in 1796. Its first mission station was fixed among the Tartars, near the Black and Caspian Seas; but its operations have not been very extensive. The (English) Church Missionary Society was established by members of the Church of England in 1799, and it is one of the chief missionary societies, having missions in Africa, India, Ceylon, China, Japan, Egypt, Arabia, Persia, Palestine, North America, etc. The Established Church of Scotland and the Free and United Presbyterian churches have been active in missionary efforts. After the missions of Great Britain the next in importance are those of the United States, the first missionary society of which country was founded in 1810 under the title of the American Board of Commissioners for Foreign Missions. The American Baptist Missionary Union was founded in 1814, the Methodist Episcopal Church Missionary Society in 1819, the Protestant Episcopal Missionary Society in 1820, the Presbyterian Board of Foreign Missions in 1833. The American missionaries have naturally done much in the conversion of the Indians of their continent, but their missions are widely spread elsewhere.

Mississippi (mis-is-sip'pi; 'Great Water'), the principal river of North America, and one of the largest rivers in the world. It has its source in Lake Itasca, State of Minnesota, whence it issues about 12 feet wide and 2 feet deep; from thence it trends southward through a number of lakes and over a series of rapids until the Falls of St. Anthony are reached; below this it receives the Iowa, the Illinois and the Missouri as tributaries, but the latter is really the main stream, having a length of 2908 miles before the rivers unite, while that of the Mississippi is only 1330 miles. From St. Louis, a little below their confluence, the Mississippi becomes a broad, rapid, muddy river, liable to overflow its banks; lower down it receives in succession the Ohio, Arkansas and Red rivers, and it finally enters the Gulf of Mexico through a large delta with several 'passes,' some distance below New Orleans. The combined lengths of the Missouri and Mississippi are about 4200 miles; the whole area drained by the Mississippi is 1,246,000 sq. miles; the maximum flood volume reaches 1,400,000 cubic feet per second below the Ohio; and the sediment transported to the gulf annually would make a solid block 1 mile square and 26 feet high. Above its junction with the Ohio at Cairo the river enters upon a large alluvial basin, bounded on both sides by high bluffs, and through this plain the river winds for about 1150 miles. The volume is usually smallest in October and greatest in April, and the low-lying lands are subject to terrible floodings during the spring freshets. At many places attempts have been made to secure the river within its banks and save the country from loss and suffering by building dykes, or *levees* as they are called. The sediment carried down, however, is continually raising the bed of the river, and thus breaks are frequently made in these levees. A recent method of improving the river's course, sanctioned by Congress and superintended by Captain Eads, is to construct light willow screens or dams on the shoals and at the wide places on the river where bars already exist. By this a deposit is formed which in time will act as a bank to hem

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in the river, while the increased volume thus obtained will help to scour out a deeper channel. The Missouri-Mississippi is now regarded as a single stream, the longest in the world. At Keokuk, Iowa, on the rapids of the Mississippi, has recently been constructed an enormous power dam. See *Water Power*.

Mississippi, one of the Southern United States; bounded north by Tennessee, east by Alabama, south by the Gulf of Mexico and Louisiana, and west by Louisiana and Arkansas; area, 46,865 sq. miles. The Mississippi winds along its western frontiers for 530 miles. Near the Gulf of Mexico the country is low and swampy, the central part is hilly and mostly prairie-land, a large part of the northeast is covered with forests, while 7000 sq. miles along the Mississippi consist of rich bottom-lands. This river receives the far larger part of the drainage. In the north the climate is tolerably mild and agreeable; but in the south, below lat. 13°, and along the swampy basin of the Mississippi, it is both extremely hot and unhealthy. In the southeast, where the pine forests extend widely, the soil is light and comparatively barren, but large tracts of it are well adapted for pasture. In the northwest, on the borders of the Yazoo, the soil is composed of rich black mould; and in the Mississippi bottom-lands, where it is protected from inundation by embankments or levees, it is of remarkable fertility. The staple of the State is cotton, in which it is surpassed only by Texas and Georgia. Of food plants corn ranks high. The other crops are chiefly oats, sweet potatoes, hay and peas; while fruit is abundant. Grazing is of some importance and there is a considerable wool-clip and large pork product. Minerals are lacking, lignite and fertilizers being the principal. The most extensive manufacturing interest is the cutting and sawing of lumber, while the production of cotton-seed-oil, oil-cake and naval stores is of some importance. The export trade, carried on through New Orleans and Mobile, is chiefly in lumber and cotton, while the river and coasting traffic is large. The railroads extend to about 4500 miles. The State supports a public school system with separate schools for the white and colored races, beside a State university and other schools of high grade, but the percentage of illiteracy is high. The capital is Jackson. The principal towns are Vicksburg, Meridian and Natchez. Other important town are Jackson, Hattiesburg, Corinth, Enterprise, and Columbus. The first permanent settlement of Mississippi was made by some Frenchmen in 1716 at Natchez, then called Fort Rosalie. It was admitted into the union in 1817. Pop. (1910) 1,797,114.

Mississippi Scheme, a bubble scheme projected by John Law at Paris in 1717. Part of the scheme was for the colonization and development of the Mississippi valley, but combined with this there was a banking scheme and a scheme for the management of the national debt, the whole being supported by the French government. Such were the hopes raised by this undertaking that the shares originally issued at 500 livres (say $100) were sold at ten, twenty, thirty and even forty times their value. People came from all parts of France, and even from foreign countries, in order to invest in the company, and there was a general mania of speculation. The government took advantage of the popular frenzy to issue increased quantities of paper money, which was readily accepted by the public creditors and invested in shares of Law's company. This went on till the value of the paper money became depreciated in value and the shares fell in price. All attempts to check the downward course failed, and when Law, the originator of the bankrupt company, fled from France in 1720 the state acknowledged itself debtor to the shareholders to the extent of 1,700,000,000 livres, or $340,000,000. See *Law, John*.

Missolonghi (mis-o-lon'gē), a town in Greece, capital of the monarchy of Acarnania and Ætolia, near the Gulf of Patras, 22 miles west of Lepanto. It is notable for its gallant resistance in 1821 and in 1825-26 to a large Turkish army. Lord Byron died here in 1824, and there is here a cenotaph to his memory. Pop. 8394.

Missoula (miz-zō'la), a city, county of Missoula Co., Montana; on two transcontinental lines, in a lumbering, dairying, farming and mining region. It is the distributing center for western Montana and the seat of the University of Montana. Pop. 14,000.

Missouri (miz-zō'rē), a river of North America, which is formed in the Rocky Mountains, in Montana, winds circuitously along the base of the mountains, then east till it reaches the western boundary of North Dakota, and receives the Yellowstone. Here it begins to flow southeastwards through North and South Dakota, then forms the eastern boundary of Nebraska, separating it from Iowa and Missouri; separates for a short distance Kansas from Missouri, then strikes eastwards across the latter State, and joins the Mississippi after a course of 2908 miles. It is navigable 2500 miles from the Mississippi. Its affluents are very

numerous on both banks, but by far the most important of them are the Yellowstone, the Nebraska or Platte and the Kansas, all from the west.

Missouri (mis-sō'rē), one of the United States of America, bounded north by Iowa; east by the Mississippi, which separates it chiefly from Illinois, but partly also from Kentucky and Tennessee; south by Arkansas; and west by Kansas and Nebraska, from which it is partly separated by the Missouri and by Oklahoma; area, 69,420 sq. miles. The surface is traversed by numerous hills and swelling ridges, but the southeast corner is almost an alluvial flat. The most important rivers are the Mississippi and the Missouri, the latter of which crosses the State from west to east, and has several navigable tributaries. Coal, lead, zinc, clays, building stones and iron are the chief minerals; but the output of iron, formerly very large, has ceased to be significant. Mineral waters occur widely. The State as a whole is devoted predominantly to agriculture. Much of the soil is well watered and extremely fertile, and there is a great deal of valuable timber. Missouri ranks high among the corn-growing States. Other products are hay and forage, wheat, oats, cotton, potatoes, tobacco, etc. All kinds of fruits and vegetables are grown in considerable abundance. Stock raising is an important industry. The State contains large deposits of bituminous coal and other minerals accessible for industrial purposes, which fact has resulted in the development of such industries as smelting and refining copper, lead and zinc; marble and stone work; iron and steel blast furnaces; kaolin and ground earths; glass; paint. The location of the cities of the State, in the midst of a great agricultural region, and their proximity and access to raw materials, are factors favorable to the development of manufacturing industries. The numerous navigable streams afford unwonted facilities for traffic, and there are about 8000 miles of railways open in the State. The climate is generally healthy, but subject to extremes. Besides the State university there are other universities and colleges (medical and other), normal schools, school of agriculture, school of mining and metallurgy, etc. Jefferson City is the capital, but St. Louis is the commercial metropolis and largest city. Missouri formed at one time part of Louisiana. It was admitted into the Union in 1821. Pop. (1910) 3,293,335.

Missouri Compromise, an act of the American Congress, passed in 1820, by which Missouri was admitted into the Union as a slave-holding State, but which enacted that slavery should never be established in any future-formed State north of lat. 36° 30'.

Mistassini (mis-tas-sē'nē), a large lake in the northeast territory of Canada, as yet imperfectly known, but reputed to be of large size. With Little Mistassini Lake, which is close beside it, it is an expansion of Rupert River, which flows into James Bay.

Mistletoe (mis'l-tō), the *Viscum album* of botanists, nat. order Loranthaceæ, a European plant growing parasitically on various trees, and celebrated on account of the religious purposes to which it was consecrated by the ancient Celtic nations of Europe, being held in great veneration by the Druids, particularly when it was found growing on the oak. It is a small shrub, with sessile, oblong, entire, somewhat leathery leaves, and small, yellowish-green flowers, the whole forming a pendent bush, covered in winter with small white berries, which contain a glutinous substance. It is common enough on certain species of trees, such as apple and pear trees, hawthorn, maple, lime, and other similar trees, but is very seldom found on the oak. Its roots penetrate into the substance of the tree on which it grows, and eventually it kills the branch supporting it. Traces of the old superstitious regard for the mistletoe still remain in Germany and England, as kissing under it at Christmas.

Mitchel, John Purroy (1879-1918), American administrator and soldier, born at Fordham, N. Y.; educated at St. John's College, Fordham, Columbia University and New York Law School. He was admitted to the bar in 1901 and was special counsel to the City of New York from December, 1906, to April, 1907. He became president of the Board of Aldermen in 1909 and was Acting Mayor of New York in August and September, 1910, during the illness of Mayor Gaynor, who was shot by a dissatisfied office-holder. He was appointed Collector of the Port of New York in 1913 and was elected mayor of New York the following year, holding office till 1917. He instituted a number of progressive policies, for some of which he was criticised; for instance, the Gary School plan (q. v.), which he installed in several of the schools. Though his services to New York were recognized, he was defeated for re-election and joined the Aviation Corps of the United States Army. He was promoted to major and looked forward to joining the American squadrons then flying in France, but his

career came to an end July 6, 1918, at Lake Charles, La., where his machine collided with another and he was killed.

Mitchel, ORMSBY M., astronomer, born in Morganfield, Kentucky, in 1809; died in 1862. He was professor of astronomy in Cincinnati College, 1836-1844. In the Civil war he attained the rank of major-general of volunteers.

Mitchell, a city, county seat of Davison Co., South Dakota. It is the seat of the Dakota University; has railroad and machine shops, etc., and a Corn Palace. Pop. 6515.

Mitchell, DONALD GRANT, author, born in Norwich, Connecticut, in 1822; died in 1908. *Reveries of a Bachelor*, perhaps his most popular book, appeared in 1850. Others of his works were *Dream Life*, *English Lands*, *Letters and Things*, etc. He wrote under the pseudonym of IK MARVEL.

Mitchell, JOHN, a famous labor leader, was born in Braidwood, Illinois, February 4, 1870. He worked in the coal mines; joined the Knights of Labor; and in 1895 became secretary-treasurer of the United Mine Workers of America. From 1899 to 1908 he was president of this organization, and as such directed the anthracite miners' strikes, in 1900 and 1902, gaining not only the gratitude of the labor union but the confidence of many leading men. He wrote *Organized Labor, Its Problems, Purposes and Ideals*. Died Sept. 9, 1919.

Mitchell, SILAS WEIR, physician, poet and novelist; born in Philadelphia, Pa., 1829; died, 1914. He studied at the University of Pennsylvania; was graduated at Jefferson Medical College (1850); practiced in Philadelphia and became prominent as a physiologist, especially as a neurologist and toxicologist. His works include *Hugh Wynne, Free Quaker; The Adventures of François; John Sherwood, Iron Master*, and other novels, several volumes of poems, and a number of medical books.

Mite (mīt), a name common to numerous small, in some cases microscopic, animals, of the class Arachnida (spiders) and division Acarida. The cheese-mite is the *Acarus domesticus*, the flour-mite *A. farinæ*, the sugar-mite *A. saccharinus*.

Miter (mī'ter), a sacerdotal ornament worn on the head by bishops and archbishops (including the pope), cardinals, and in some instances by abbots, upon solemn occasions, or by a Jewish high priest. It is a sort of cap pointed and cleft at the top, this form being supposed to symbolize the 'cloven tongues' of the day of Pentecost. The pope has four miters, which are more or less rich

1, Miter of Jewish High Priest. 2, Miter of English Bishop. 3, Miter of English Archbishop.

according to the solemnity of the feast-days on which they are to be worn. The English archbishops have a ducal cornet round their miters.

Mitford (mit'furd), MARY RUSSELL, an English authoress, daughter of a physician at Alresford, Hampshire, and born there in 1786; died in 1855. Her best-known works are *Our Village*, a series of prose sketches descriptive of English country life; her interesting *Recollections of My Literary Life* and *Atherton*, a novel in three volumes, published in 1854.

Mitford, WILLIAM, an English historian, born in 1744; died in 1827. He studied at Queen's College, Oxford, and entered the Middle Temple, but early quitted the profession of law, and obtained a commission in the Hampshire militia, of which he became colonel. His early fondness for Greek led him to undertake a *History of Greece*. The first volume appeared in 1784; the fifth and last, bringing the narrative down to the death of Alexander the Great, was published in 1818. Despite its strong anti-democratic prejudices, until the appearance of the works of Thirlwall and Grote, his history was considered the standard. He held the professorship of ancient history in the Royal Academy, and sat in parliament from 1785 till 1818.

Mithras (mith'ras), the Mitra of the Rig Veda, the sun, or the genius of the sun, with the Persians, which was worshiped as a deity at a later period also in Rome. The cultus of Mithras found its way into all parts of Europe visited by the Roman legions. In Germany many tokens of its former existence are still to be found.

Mithridates or MITHRADATES (mith-ra-dā'tēs), king

of Pontus, on the southern shore of the Black Sea, surnamed the *Great*. His father was murdered B. C. 120, and Mithridates ascended the throne at the age of thirteen. Soon after attaining his majority he commenced his career of conquest, which made him master of nearly all Asia Minor, besides Greece, and brought him into conflict with Rome. In B. C. 88, Sulla led a Roman army into Greece, and restored the Roman power in that country. For four years Mithridates disputed possession of Asia, but was at last compelled to succumb, B. C. 84, and to confine himself to his hereditary dominions, though he soon again began the war. After the death of Sulla, which occurred in B. C. 78, Mithridates levied another army with a determination to expel the Romans from Asia. Being defeated by Lucullus, who was appointed consul B. C. 74, he was followed by the victorious Romans into his own states, and driven to seek refuge in Armenia, then ruled by Tigranes, who refused to deliver him up. Here Mithridates raised a third great army, and in B. C. 67 completely defeated the Romans under Triarius, the lieutenant of Lucullus, who had been recalled; and, following up his success, rapidly recovered the larger part of his dominions. The Romans now invested Pompey with absolute power in the East, and by him, in B. C. 66, the forces of Mithridates were completely routed near the Euphrates. The king retired to Bosporus (the Crimea), where his troops, headed by his son Pharnaces, broke out in mutiny, and Mithridates killed himself, in B. C. 63.

Mitla (mit'la), a ruined city of Mexico, 15 miles S. E. of Oajaca, with extensive remains of a prehistoric race.

Mitrailleuse (mit-ra-yeus'), a breech-loading machine-gun introduced in France shortly before the Franco-German war of 1870-71. It consisted of a number of rifled barrels, either bound together or bored out of the solid, and mounted on the same principle as an ordinary field piece. Plungers and springs were fixed in connection with the breech ends of the barrels that they might be fired in succession with great rapidity, so as to concentrate a deadly fire upon any desired point. The word is now used by the French to apply to all varieties of machine guns (q. v.).

Mitre, a sacerdotal headdress worn by bishops. See *Miter*.

Mitre (*mitra*), a name of many mollusca inhabiting a small and pretty turreted shell. The shells exhibit a great variety of patterns, and are variegated with every kind of hue. They abound in the seas of hot climates.

Mittau (mit'ou), or Mitau, a town in Courland, Baltic provinces, 29 miles southwest of Riga. It was captured by Germany during the European war (q. v.), and temporarily policed by German troops. The town is in a low, flat and sandy district of the Aa, and has few industries, though the trade in grain and lumber is extensive. The population in 1913 was 39,200, mainly Germans, but including also 6500 Jews and 5000 Letts and Russians.

Mittimus (mit'i-mus), in law, a warrant of commitment to prison; also a writ for removing records from one court to another.

Mittweida (mit'vi-dä), a town of Saxony, on the Zschoppau, 36 miles southeast of Leipzig. It has extensive manufactures of textile fabrics. Pop. 16,119.

Mitylene (mit'i-lē-nē). See *Lesbos*.

Mivart, St. George, naturalist and scientist, born in 1827; educated at Harrow; King's College, London; and the Roman Catholic College at Oscott. He was called to the bar in 1851, but devoted himself chiefly to science. He was professor of biology at the Roman Catholic College at Kensington, secretary to the Linnæan Society, and vice-president of the Zoölogical Society. Among his works are *The Genesis of Species* (combatting the Darwinian 'natural selection'), *Man and Apes*, *Contemporary Evolution*, *The Cat*, *Nature and Thought*, etc. He died in 1900.

Mizzen (miz'n), a term applied to the aftermost mast of a three-masted vessel, that is, the one nearest the stern. In a four-master the jigger-mast comes between it and the stern.

Mjösen. See *Miösen*.

Mnemonics (nē-mon'iks), the art of assisting the memory by methods of association. Many devices have been devised for assisting in the recollection of facts, dates, numbers, or the like, but they all go on the principle of associating the thing to be remembered with something else which can be more easily recollected. The art dates from a very early period, Simonides, the Greek poet (500 B. C.), having devised a system. All the systems are more or less arbitrary, and their chief value would seem to lie in the exercise which they give the memory, thereby strengthening it. Students, salesmen, physicians, etc., frequently

use a mnemonic system. Memorial lines and verses have been extensively used as aids to memory.

Mnemosyne (nē-mos'i-nē; Greek, 'Memory'), in the Greek mythology, daughter of Urānus (Heaven) and Gaia (Earth), and by Zeus the mother of the nine Muses.

Moa (mō'a), an extinct bird of New Zealand. See *Dinornis*.

Moab (mō'ab), the land of the Moabites, a tribe dwelling in the mountainous region east of the Dead Sea. According to the Mosaic account (Gen. xix, 30) the Moabites were descended from Moab, the son of Lot by his eldest daughter. In the time of the judges they were for eighteen years masters of the Hebrews, but in the time of David were rendered tributaries to them. After the Babylonish captivity they lost their separate national existence.

Moabite Stone (mō'a-bīt), a monument of black basaltic granite about 3 feet 5 inches high and 1 foot 9 inches wide and thick, with rounded top but square base, on which there is an inscription of thirty-four lines in Hebrew-Phœnician characters, discovered in 1868 at Dhiban in the ancient Moab. It was unfortunately broken by the natives, but almost the whole of the inscription has been recovered from the broken pieces. The inscription dates about 900 B.C., and is the oldest known in the Hebrew-Phœnician form of writing. It was erected by Mesha, king of Moab, and is a record of his wars with Omri, king of Israel, and his successors.

Moallakat. See *Arabian Literature*.

Moat (mōt) or DITCH, in fortification, a deep trench dug round the rampart of a castle or other fortified place, and often filled with water.

Mobangi (mō-ban'gi), or UBANGI, a river of Central South Africa, a tributary on the right bank of the Congo, which it enters nearly opposite Equator Station, lat. 0° 30'; navigable for upwards of 400 miles, but there are difficult rapids in 40° 20' N.

Moberly (mō'bèr-li), a city of Randolph County, Missouri, 146 miles W. of St. Louis has railroad machine and car shops and manufactures of carriages, flour, tobacco, etc. It is an important shipping point for farm produce, live stock, tobacco, wool, lumber, etc. Pop. 10,928.

Mobile (mō-bēl'), a city and seaport of Alabama, on the right bank of Mobile River at its entrance into Mobile Bay. It is the capital of a county of the same name. It lies 30 miles N. of the Gulf of Mexico and 140 miles E. N. E. of New Orleans. The city occupies about 17 square miles of a sandy plain, which rises gradually from a low water front along the river to a range of hills a few miles to the west. The chief buildings are the Federal Building, Cotton Exchange and Chamber of Commerce, Court House, U. S. Marine Hospital, Barton Academy (part of the public school system), etc. The city is the see of a Roman Catholic bishopric. It has an excellent harbor and enjoys an important export trade, especially in cotton. It also exports large quantities of lumber, shingles, staves, coal, cotton, clothing, fruit and vegetables. The leading industries are: Bread and other bakery products; cars and general shop construction; flour mill and grist mill products; foundry and machine shop products; lumber, etc. Pop. 51,521.

Mobile, a river of the United States, in Alabama, formed by the union of the Alabama and the Tombigbee, which unite about 45 miles above the town of Mobile. It enters Mobile Bay by two mouths.

Mobile, GARDE. See *Garde Nationale Mobile*.

Mobile Bay, an estuary of the Gulf of Mexico, from 8 to 18 miles wide, and about 35 miles in length, N. to S., the general depth being 12 to 14 feet.

Mobilier. See *Crédit Mobilier*.

Mobilization (mob-il-i-zā'shun), a military term, being the act of putting troops into a state of readiness for active service. The mobilization of an army or a corps includes not

only the calling in of the reserve and the men on furlough, but the organizing of the staff, as well as the commissariat, medical, artillery, and transport services, the accumulating of provisions, munitions, and the like.

Moccasin (mok'a-sin), a shoe or cover for the feet, made of deer-skin or other soft leather, without a stiff sole, and ornamented on the upper part; the customary shoe worn by the native American Indians.

Moccasin Snake, a very venomous serpent (*Cenchris* or *Ancistrŏdon piscivŏrus*), frequenting swamps in many of the warmer parts of America. It is about two feet in length, dark-brown above, and gray below. It occurs in parts of the Southern United States.

Mocha (mok'a), or MOKHA, an Arabian fortified seaport, on the Red Sea, about 40 miles within the Strait of Bâbel-Mandeb, the chief port and emporium in the dominions of the Imâm of Sanna. It owes its importance to the coffee trade. Pop. 5000.

Mocha-stone, a variety of dendritic agate, containing dark outlines like vegetable filaments, and called also *Moss-agate.*

Mocking-bird, an American bird of the thrush family (*Mimus polyglottus*). It is of an ashy-brown color above, lighter below, and is much sought for on account of its wonderful faculty of imitating the cries or notes of almost every species of animal, as well as many noises that are produced artificially. Its own notes form a beautiful and varied strain. It inhabits North America chiefly, being a constant resident of the Southern States, and but rare and migratory in the northern parts of the continent. It is also found in the West Indian Islands and in Brazil.

Mock-orange. The name given to the sweet Syringa (*Philadelphus coronarius*), a shrub with creamy-white flowers which somewhat resemble orange blossoms. Also the ornamental yellow fruit of the osage orange (*Maclura aurantiaca*), which is called mock-orange in the Southern States.

Mode (mōd), in music, a species of scale of which modern musicians recognize only two, the *major* and the *minor modes.* See *Major, Gregorian Tones.*

Modena (mō'dā-na; anciently, *Mutina*), a town of North Italy, capital of the province of its own name, situated in a somewhat low but fertile plain, between the Secchia and the Panaro. It is built with regularity, and has various open areas. Modena is the ancient *Mutina*, in the territory of the Boii, and became the seat of a Roman colony in 183 B.C. The most remarkable edifices are the cathedral, consecrated in 1184, a fine specimen of the Romanesque style, with interesting sculptures, monuments and campanile; several fine churches; the ducal palace; art academy; the university; the public library, etc. The manufactures and trade are unimportant. Pop. 70,923.—Modena was formerly an independent duchy bordering on Tuscany, Lucca, Bologna, Mantua and Parma; area, 2340 square miles. It is now divided into the provinces of Modena (987 square miles; pop. 352,212), Massa-e-Carrara, and Reggio. Previous to 1859 Modena was governed by a branch of the house of Este.

Modernism (mod'er-nism), the term applied to a complex movement in the Roman Catholic Church, which began as an attempt to break loose from the neo-Scholasticism patronized by Pius IX and Leo XIII, and soon broadened into a thoroughgoing revolt against the methods characteristic of the Vatican. Its leaders have won distinction in the fields of Biblical criticism and ecclesiastical history; and its motto is that: Catholicism is the strength of popery, but popery the weakness of Catholicism. Modernists deny that the spirit of religion can be imprisoned in any unalterable formula; but that it is in constant need of restatement. On the other hand, they are opposed to violent changes, such as the change to Protestantism, believing that the present has its roots in the past, and that Catholic instinct is essentially right even if Catholic theology is not. The whole movement was condemned by Pius X's encyclical (*Pascendi gregis*) of 1907.

Modica (mō'dē-kā), a town of Sicily, in the province of and 81 miles W. S. W. of Syracuse. It exports grain, oil, wine, cheese, etc. Pop. 55,924.

Modillion (mo-dil'yun), in architecture, a block carved into the form of an enriched bracket, used under the corona in the cornice of the Corinthian and Composite orders, and occasionally also of the Roman Ionic.

Modjeska (mōd'jes-ka), HELENA, a Polish actress, born at Cracow in 1844. She won success at Cracow and played leading parts at Warsaw from 1863 to 1876. She was twice married, emigrating to California with her second husband in 1877. There she returned to the stage, playing in English-speaking parts, and won the reputation of being one of the best emotional actresses. She died in 1909.

Modocs (mō'doks), an American Indian tribe, originally settled on the S. shore of Klamath Lake, California. From 1847 till 1873 they were in continual conflict with the whites. Only a small remnant of them now exists in the Indian territory and in Oregon.

Modugno (mo-dun'yō), a town of South Italy, province Bari. It has textile factories. Pop. 11,885.

Modulation (mod-ū-lā'shun), in music, the transition from one key to another. The simplest form is the change from a given key to one nearly related to it, namely, its fifth (dominant), fourth (subdominant), its relative minor, or the relative minor of its fifth. Modulation is generally resorted to in compositions of some length, for the purpose of catching and pleasing the ear with a fresh succession of chords.

Modus Vivendi, a phrase signifying 'mode of living,' is now used to signify a temporary arrangement between two countries, providing for the management of certain affairs pending negotiations for a treaty for the final settlement of these affairs.

Möen (mew'en), an island belonging to Denmark, on the southeast of Seeland; area, about 80 square miles. Its highest point above the sea is 460 feet. It is very fertile and picturesque. Pop. 15,780.

Mœris (mē'ris), an ancient lake basin in Egypt, formerly identified with Lake Birket-el-Kurû in the Fayûm. Lake Mœris, long since dried up, lay further to the E. N.E., and was probably an artificial excavation for the purpose of receiving the superabundant water during the inundation of the Nile, and distributing its contents over the fields when the overflow was insufficient. It is said to have been 450 miles in circumference and about 300 feet deep.

Moero (mō'e-rō), a lake of Central S. Africa, lying southwest of Tanganyika, and drained by the Luapula. It was discovered by Livingstone.

Mœsia (mē'si-a), in ancient geography, a country lying north of Thrace and Macedonia, and south of the Danube, corresponding to the modern Servia and Bulgaria.

Mœso-Gothic (mē'sō), the language of the Mœso-Goths, or Goths of Mœsia.

Mœso-Goths, a tribe of Goths who settled in Mœsia on the Lower Danube, and there devoted themselves to agriculture, under the protection of the Roman emperors. See *Goths*.

Moffat (mof'at), a watering-place of Scotland, in the county of Dumfries, pleasantly situated in an amphitheater of rounded hills in the valley of the Annan. It has mineral springs, a hydropathic establishment, assembly rooms, etc., and is much frequented by visitors in summer. Pop. about 2500.

Moffat, ROBERT, Scottish missionary traveler, born in 1795; died in 1883. He began missionary work in South Africa in 1813, and in 1818 made a long exploratory tour in the Damara Country. During the visit to Britain in 1842 he published an account of his travels, and a translation of the New Testament and Psalms in the Bechuana language. One of his daughters became the wife of Dr. Livingstone.

Mogador (mog-a-dōr'), a seaport of Morocco, about 110 miles west by south of the city of Morocco. It is fortified, and has a good harbor. The mosques are some of them splendid specimens of architecture. The exports are wool, gum, wax, hides, skins, honey, ostrich feathers, etc. Pop. about 20,000.

Mogul (mō-gul'), a word which is the same as *Mongol*, but is applied particularly to the sovereigns of Mongolian origin, called Great or Grand Moguls, descendants of Tamerlane, who ruled in India from the sixteenth century downwards, the first of them being the conqueror Baber. See *India*.

Mohács (mo'häch), a town of Hungary, on the Danube, 25 miles E. S. E. of Fünfkirchen. It carries on an active trade, being a station for steamers plying on the Danube. Here Solyman the Magnificent defeated the Hungarians in 1526, and the Turks were defeated by the Duke of Lorraine in 1687. Pop. 15,812.

Mohair (mō'här), the hair of the Angora goat of Asia Minor. It is soft and fine as silk, of a silvery whiteness, and is manufactured into dress-goods. The term is also applied to a woolen and cotton fabric resembling the true mohair.

Mohammed (mō-ham'ed), MAHOM'ET, or more correctly MUHAMMED, the founder of Islamism, was an Arabian by birth, of the tribe of the Koreish, and was born of poor parents in 571 A.D., in Mecca. His parents died early and he was brought up by his uncle Abu Talib, who trained him to commerce, and with whom he journeyed through Arabia and Syria. In his twenty-fifth year his uncle recommended him as agent to a rich widow, named Chadidja, and he acquitted himself so much to her satisfaction that she married him, and thus placed him in easy circumstances. She was fifteen years older than he, but he lived with her in happy and faithful wedlock. He

seems to have had from his youth a propensity to religious contemplation, for he was every year accustomed, in the month Ramadhan, to retire to a cave in Mount Hara, near Mecca, and dwell here in solitude. Mohammed began his mission in the fortieth year of his age by announcing himself to his own family as the apostle of a new religious mission. His wife was one of the first to believe in him, and among other members of his family who acknowledged his mission was his cousin Ali, the son of Abu Talib. Of great importance was the accession of Abu Bekr, a man of estimable character, who stood in high respect, and persuaded ten of the most considerable citizens of Mecca to join the believers in the new apostle. They were all instructed by Mohammed in the doctrines of *Islam*, as the new religion was styled, which were promulgated as the gradual revelations of the divine will, through the angel Gabriel, and were collected in the Koran (which see). After three years Mohammed made a more public announcement of his doctrine, but for years his followers were few. In 621 Mohammed lost his wife, and the death of Abu Talib took place about the same time. Deprived of their assistance, he was compelled to retire, for a time, to the city of Taif. On the other hand, he was readily received by the pilgrims who visited the Kaaba (which see), and gained numerous adherents among the families in the neighborhood. Mohammed now adopted the resolution of encountering his enemies with force. Only the more exasperated at this they formed a conspiracy to murder him. Warned of the imminent danger, he left Mecca, accompanied by Abu Bekr alone, and concealed himself in a cave not far distant. Here he spent three days undiscovered, after which he arrived safely at Medina, but not without danger (A.D. 622). This event, from which the Mohammedans commence their era, is known under the name of the Hejra, which signifies *flight*. In Medina Mohammed met with the most favorable reception: thither he was followed by many of his adherents. He now assumed the sacerdotal and regal dignity, married Ayesha, daughter of Abu Bekr, and as the number of the faithful continued to increase, declared his resolution to propagate his doctrines with the sword. In the battle of Bedr (623), the first of the long series of battle by which Islamism was established over a large portion of the earth, he defeated Abu Sofian, the chief of the Koreishites. He in turn was defeated by them at Ohod, near Medina, soon after, and in 625 they unsuccessfully besieged Medina, and a truce of ten years was agreed on. Wars with the Jewish tribes followed, many Arabian tribes submitted themselves, and in 630 he took possession of Mecca as prince and prophet. The idols of the Kaaba were demolished, but the sacred touch of the prophet made the black stone again the object of the deepest veneration, and the magnet that attracts hosts of pilgrims to the holy city of Mecca. The whole of Arabia was soon after conquered, and a summons to embrace the new revelation of the divine law was sent to the Emperor Heraclius at Constantinople, the King of Persia, and the King of Abyssinia. Preparations for the conquest of Syria and for war with the Roman Empire were begun, when Mohammed died at Medina (632). His body was buried in the house of Ayesha, where he died, and which afterwards became part of the adjoining mosque, and a place of pilgrimage for the faithful in all time to come. Of all his wives, the first alone bore him children, of whom only his daughter Fatima, wife of Ali, survived him. There is no doubt that Mohammed was a man of extraordinary insight and deep reflection. Though without book-learning, he had a deep knowledge of man, was familiar with Bible narratives and eastern legends, and possessed a grasp of the eternal ground of all religion, though tinged and modified by his vivid poetic imagination. See *Koran*, *Mohammedanism*.

Mohammed, the name of five Ottoman sultans, of whom the careers of Mohammed I and II are treated under *Ottoman Empire* (which see). Mohammed (or Mahomet) III (1568-1603), and IV (1649-91) were feeble rulers. Mohammed (or Mehmed) V succeeded April 27, 1909, on the deposition of his brother Abdul-Hamid in consequence of a revolution. He was born in 1844, and had spent many years in seclusion before he was taken from his virtual prison to ascend the throne of Turkey.

Mohammed Ahmed. See *Mahdi*.

Mohammed Ali. See *Mehemet Ali*.

Mohammedanism (mō-ham'e-dan-ism), the name commonly given in Christian countries to the creed established by Mohammed. His followers call their creed *Islam* (entire submission to the decrees of God), and their common formula of faith is, 'There is no God but Allah, and Mohammed is his prophet.' The dogmatic or theoretical part of Mohammedanism embraces the following points:—1. Belief in God, who is without beginning or end, the sole Creator and Lord of the universe, having absolute power, knowledge, glory and perfection.

2. Belief in his angels, who are impeccable beings, created of light. 3. Belief in good and evil Jinn (genii), who are created of smokeless fire, and are subject to death. 4. Belief in the Holy Scriptures, which are his uncreated word revealed to the prophets. Of these there now exist, but in a greatly corrupted form, the Pentateuch, the Psalms, and the Gospels; and in an uncorrupted and incorruptible state the Koran, which abrogates and surpasses all preceding revelations. (See *Koran*.) 5. Belief in God's prophets and apostles, the most distinguished of whom are Adam, Noah, Abraham, Moses, Jesus and Mohammed. Mohammed is the greatest of them all, the last of the prophets and the most excellent of the creatures of God. 6. Belief in a general resurrection and final judgment, and in future rewards and punishments, chiefly of a physical nature. 7. Belief, even to the extent of fatalism, in God's absolute foreknowledge and predestination of all events both good and evil.

The practical part of Mohammedanism inculcates certain observances or duties, of which four are most important. The first is prayer, including preparatory purifications. Prayer must be engaged in at five stated periods each day. On each of these occasions the Moslem has to offer up certain prayers held to be ordained by God, and others ordained by his prophet. During prayer it is necessary that the face of the worshiper be turned towards the kebla, that is, in the direction of Mecca. Prayers may be said in any clean place, but on Friday they must be said in the mosque. Second in importance to prayer stands the duty of giving alms. Next comes the duty of fasting. The Moslem must abstain from eating and drinking, and from every indulgence of the senses, every day during the month of Ramadhan, from the first appearance of daybreak until sunset, unless physically incapacitated. The fourth paramount religious duty of the Moslem is the performance at least once in his life, if possible, of the pilgrimage (el-Hadj) to Mecca, after which he becomes a Hadji. Circumcision is general among Mohammedans, but is not absolutely obligatory. The distinctions of clean and unclean meats are nearly the same as in the Mosaic code. Wine and all intoxicating liquors are strictly forbidden. Music, games of chance, and usury are condemned. Images and pictures of living creatures are contrary to law. Charity, probity in all transactions, veracity (except in a few cases), and modesty, are indispensable virtues. After Mohammed's death Abu Bekr, his father-in-law, became his successor, but disputes immediately arose, a party holding that Ali, the son-in-law of Mohammed, was by right entitled to be his immediate successor. This led to the division of the Mohammedans into the two sects known as Shiites and Sunnites. The former, the believers in the right of Ali to be considered the first successor, constitute at present the majority of the Mussulmans of Persia and India; the latter, considered as the orthodox Mohammedans, are dominant in the Ottoman Empire, Arabia, Turkestan and Africa. The propagation of Mohammedanism by conquest took place with extraordinary rapidity and in a very brief period it spread widely through Southern Asia and Northern Africa and made its way into Spain. The total Mohammedan population of the world is estimated at over 220,000,000. See *Caliph*, *Shiites*, *Sunnites*, etc.

Mohammera (mō-ham'ér-a), a town of Western Persia, province Khusistan, at the junction of the Karun with Shat-el-Arab. Pop. 15,000.

Mohave (mo-hä'vā), the name of an Indian tribe of Yuman stock, living along the lower Colorado River, in Arizona and California. They are agricultural, and make pottery and baskets. Mohave Desert is a basin, with little water or vegetation, chiefly in the s. e. of California, and extending into Arizona. The *Mohave River* rises in San Bernardino range, and finally disappears in the Mohave Sink.

Mohawk (mō'hąk), a river of the United States, the principal tributary of the Hudson in the state of New York; affords abundant water-power, and flows through beautiful scenery.

Mohawks, a tribe of North American Indians, belonging to the confederacy of the Five (afterwards Six) Nations. (See *Iroquois*.) They originally inhabited the valley of the Mohawk River. With the rest of the confederacy they adhered to the British interests during the Revolution, and many left the country on its termination for Canada.

Mohicans (mō-hi'kans), or MOHEGANS, a tribe of Indians of the great Algonquin family, formerly occupying the country now forming the southwestern parts of New England and New York State east of the Hudson.

Mohilev (mō'hi-lef), a town in Russia, capital of a government of the same name, on both banks of the Dnieper, 212 miles w. s. w. of Moscow. It has spacious streets and a large octagonal square occupied by the principal buildings, among others the palace of the Greek archbishop and the bazaar. The staple manufacture is tobacco; and the

trade with Riga, Memel, Dantzig and Odessa, chiefly in leather, wax, honey, potash, oil and grain, is very extensive. Pop. 43,106.—The government has an area of about 18,545 square miles. Pop. 4,708,041.—There is another Mohilev in the government of Podolia, on the left bank of the Dniester, 60 miles E. S. E. of Kamenetz, with a pop. of 22,100.

Mohilla. See *Comoro Islands.*

Mohur (mō'hur), an Indian gold coin, value fifteen rupees.

Moidore (moi'dōr; from the Portuguese, *moeda d'ouro*, literally, coin of gold), a gold coin formerly used in Portugal (from 1690-1722), of the value of 4800 reis, or about $6.75.

Moir, DAVID MACBETH, better known by his pseudonym of *Delta*, poet and miscellaneous writer, born at Musselburgh, Scotland, in 1798. He adopted the medical profession, as a practitioner of which in his native town the whole of his life was spent. He early showed a turn for literary composition, both in prose and verse, and became a frequent contributor, first to *Constable's* and afterwards to *Blackwood's Magazine*, where his more serious effusions were subscribed by a Δ. In the latter magazine most of his writings in prose and verse, including the inimitable *Autobiography of Mansie Wauch, Tailor in Dalkeith*, first appeared. He died in 1851.

Moiré (mwȧ-rā), the French name given to silks figured by the process called watering. The silks for this purpose, though made in the same way as ordinary silks, are of double width, and must be of a stout, substantial make. They are folded and subjected to an enormous pressure, of from 60 to 100 tons, generally in a hydraulic machine, and the air in trying to escape drives before it the small quantity of moisture that is used, and hence is effected the permanent marking called watering, which is for the most part in curious waved lines. The finest kinds of watered silks are known as *moirés antiques*. Woolen fabrics to which the same process has been applied are called *moreen*.

Moirée Métallique, tin-plate showing a crystallized surface through the action of acids; also, iron-plate coated with tin, and having the coating more or less removed by acids, so as to give it a variety of shades.

Moissac (mwȧs-ȧk), a town of France, dep. Tarn-et-Garonne, on the Tarn. Pop. 4523.

Mojanga (mō'jun-ga), a seaport on the northwest coast of Madagascar.

Mojarra de Las Piedras (mō-har'ȧ), a fish found on the west coast of Mexico and Central America from Mazatlan to Panama.

Mojarra de las Piedras (*Pomacanthus zonipectus*). From Bulletin 47, U. S. Nat. Museum.

Mokanna (mo-kan'na), AL, HAKEM IBN HASHEM, styled the *Veiled Prophet*, a Mohammedan impostor of Persia in the eighth century. He attributed to himself divine powers, and gained many followers, so that at last the caliph was compelled to send an armed force against him. He retired to a fortress in Trasoxiana, where he first poisoned and burned his family, and then burned himself. His followers continued to pay him divine honors after his death. He is the hero of Moore's Veiled Prophet of Khorassan.

Mola-di-Bari (mō'la-dē-bȧ'rē), a seaport of S. Italy, in the province and 12 miles E. S. E. from Bari, on the Adriatic. The district produces wine and olives. Pop. 13,962.

Molar Teeth. See *Teeth.*

Molasse (mu-las'), a soft greenish sandstone which occupies the country between the Alps and the Jura.

Molasses (mu-las'ez), the uncrystallized syrup produced in the manufacture of sugar. It differs from treacle, as molasses comes from sugar in the process of making, treacle in the process of refining.

Mold (mōld), a borough of North Wales, in Flintshire, 6 miles south of Flint and 12 miles west of Chester. The principal industries are collieries, lead mines, mineral oil works, limestone quarries and potteries in the neighborhood. Pop. 4875.

Moldau (mol'dou), the chief river of Bohemia, which, after passing through Prague, joins the Elbe; length, 260 miles.

Moldavia. See *Roumania.*

Mole (mōl), a name given to insectivorous animals of the genus *Talpa*, family Talpidæ, which, in search of worms or insect larvæ, form burrows just under the surface of the ground, throwing up the excavated soil into a little ridge or into little hills. The common mole (*T. europea*) is found all over Europe, except in the extreme south and north. It is from 5 to 6 inches long; its head is large, without any external ears; and its eyes are very minute, and concealed by its fur, which is short and soft. Its forelegs are very short and strong, and its snout slender, strong and tendinous. Another species (*T. cæca*, or blind mole) is found in the south of Europe. It has its name from its eye being always covered by its eyelid. The Cape mole, or changeable mole (*Chrysochlōris capensis*), is remarkable as being the only mammal that exhibits the splendid metallic reflection which is thrown from the feathers of many birds. The 'star-nosed moles' of North America (*Condylūra macrūra*) are so-named from the star or fringe-like arrangement of the nasal cartilages. The shrew moles (*Scalops*) of North America are more properly included among the shrews.

Mole, a mound or massive work formed of large stones laid in the sea so as to partially inclose and shelter a harbor or anchorage.

Mole-cricket, a name given to certain insects from the peculiar similarity of the anterior extremities of the species, and from the resemblance in their habits, to those of the mole. The best-known species (*Gryllotalpa borealis*), common in the United States, is about 1½ inches long and of a brown color. In making its burrows it cuts through the roots of plants and commits great devastation in gardens. A larger species is found in South America.

Molecule (mol'e-kūl), the smallest quantity of any elementary substance or compound which is capable of existing in a separate form. It differs from *atom*, which is known to us only as a conception, inasmuch as it is always a portion of some molecular aggregate of atoms. *Molecular attraction* is that species of attraction which operates upon the molecules or particles of a body. Cohesion and chemical affinity are instances of molecular attraction. See *Chemistry.*

Mole-marsupial (mōl' mär-sū-pi-al), a small marsupial inhabiting the desert region of South Australia. It has the habits and appearance of a small mole. Its color is

Mole-marsupial (*Notoryctes typhlops*).

pale yellow and the nose has a horny shield; the tail is bare and leathery. The species is very rare. See *Marsupialia.*

Mole-rat, a name given to rodents of the genus *Spalax*, family Spalacidæ. They are dumpish stout-bodied rodents, with short, strong limbs, a short or scarcely any tail, and minute or rudimentary eyes and ears. They make tunnels and throw up hillocks like the mole, but their food appears to consist wholly of vegetable substances. All the species belong to the Old World, *S. typhlus* inhabiting the south of Russia and some parts of Asia.

Moleskin (mōl'skin), a strong twilled cotton fabric (fustian), cropped or shorn before dyeing; much used for workmen's clothing. So called from its being soft, like the skin of a mole.

Molfetta (mōl-fet'ta), an Italian port on the Adriatic, on the railway from Ancona to Brindisi, 15 miles W. N. W. of the city of Bari. It has a cathedral and several other churches and a college; manufactures of linen and saltpeter; a harbor, well sheltered except on the north; and a considerable trade. Pop. 42,868.

Molière (mō-lyär), the assumed name of JEAN BAPTISTE POQUELIN, a French comic dramatist, born at Paris in 1622. His father was a tradesman connected with the court, and he received a good education. He studied law, but gave it up for the career of an actor, assuming in this profession the name of Molière. After obtaining great success in the provinces he settled in Paris in 1658, having previously produced his two comedies, *L'Etourdi* and *Le Dépit Amoureux.* In the following year his reputation was greatly advanced by the production of the

Précieuses Ridicules, a delicate satire on the prevailing affectation of the character of *bel esprit*, on the pedantry of learned females, and on affectation in language, thoughts and dress. It produced a general reform when it was brought forward in Paris. Continuing to produce new plays, and performing the chief comic parts himself, he became a great favorite both with the court and the people, though his enemies, rival actors and authors, were numerous. Louis XIV was so well pleased with the performances of Molière's company that he made it especially the royal company, and gave its director a pension. In 1662 Molière made an ill-assorted marriage with Armande Béjart, upwards of twenty years younger than himself, a union that embittered the latter part of his life. Among his works other than those mentioned may be noted: *L'Ecole des Maris*, *L'Ecole des Femmes*, *Le Mariage Forcé*, *Don Juan*, *Le Misanthrope*, *Le Médecin Malgré lui*, *Le Tartufe*, *L'Avare*, *George Dandin*, *Les Fourberies de Scapin*, *Le Malade Imaginaire*, etc. Molière died in 1673 of an apoplectic stroke, a few hours after playing in the latter. As a player he was unsurpassed in high comic parts; and in the literature of comedy he bears the greatest name among the moderns after Shakespere. He borrowed freely from Latin, Spanish and Italian writers, but whatever materials he appropriated he so treated them as to make the result entirely his own and original. The Archbishop of Paris at first refused him burial as being an actor and a reviler of the clergy; but the king himself insisted on it.

Molina (mō-lē'na), Luis, a Jesuit and professor of theology at the Portuguese university of Evora, was born at Cuenca, in New Castle, in 1535, and died in 1601 at Madrid. He has become known by his theory of grace. In order to reconcile man's free-will with the Augustinian doctrine of grace, he published a work in which he undertook to reconcile the free-will of man with the foreknowledge of God and predestination. It caused lengthened discussion, and passed subsequently into the Jansenist controversy. Molina was attacked by Pascal in the Provincial Letters.

Moline (mo-lēn'), a city of Rock Island County, Illinois, on the east bank of the Mississippi River, about 4 miles above Davenport, Iowa, on the Chicago, Rock Island and Pacific and other railroads, and is an important manufacturing center, having abundant water-power. Here are large plow and corn-planter factories; also steel and iron works, railroad shops, an elevator factory, wagon and carriage works and various other industries. Pop. 24,199.

Molinos (mo-lē'nos), Miguel, a Spanish mystic and theologian, born in 1627; died in 1696. In 1675 he published the *Spiritual Guide*, an ascetical treatise, which promulgated the new religious doctrine known as *Quietism*. In 1685 he was cited before the Holy Office, and in 1687 the Inquisition condemned his works. He spent the rest of his days as a prisoner in a convent of the Dominicans.

Mollah (mol'a), an honorary title accorded to any one in Turkey who has acquired respect from purity of life, or who exercises functions relating to religion or the sacred or canon law. The title is not conferred by any special authority, but springs spontaneously from public respect. It is nearly equivalent to *master*, *excellency*, in English.

Mollendo (mol-en'dō), a small seaport on the coast of Peru, dep. Arequipa, with a considerable trade. Pop. about 2200.

Mollusca (mol-us'ka), an animal subkingdom, comprising those soft-bodied animals known as slugs, snails, limpets, oysters, cockles, etc. In some the body is naked and unprotected, in others it is enclosed in a muscular sac, but the great majority are provided with an exoskeleton or *shell*. The shell-bearing molluscs are popularly divided into *univalves*, *bivalves* and *multivalves*. The univalves are those whose shell consists of only a single piece, often open and cup-shaped, as in the limpet, or more commonly of a long cone wound spirally round a real or imaginary axis, as the garden-snail, the whelk or periwinkle. The bivalves are those of which the shell is formed of two pieces joined by a hinge, as the cockle and oyster. The multivalves

Mollusca and Molluscoida.

1, *Sepia officinalis* (cuttle-fish) and cuttle-bone—class Cephalopoda. 2, *Nerita albicilla*—a gasteropod. 3, A pteropod. 4, *Terebratula diphya*—class Brachiopoda. 5, *Cyrithea maculata*—class Lamellibranchiata. 6, *Cynthia papillosa*—class Tunicata.

have the shell composed of several pieces. These latter molluscs are few in number. The shells of the Mollusca are secreted by the soft integument or *mantle* (also called the *pallium*). The chief mass of the shell is made up of carbonate of lime with a small proportion of animal matter. The mollusca have a distinct alimentary canal, shut off from the general cavity of the body, and situated between the blood system, which lies along the back, and the nerve system, which is towards the ventral aspect of the body to the digestive system consists of a mouth, gullet, stomach, intestine and anus, except in a few forms, in which the intestine ends blindly. The blood is almost colorless. Respiration is variously effected; in the lamp-shells, by long ciliated arms springing from the sides of the mouth; in the bivalve shell-fish, the cuttle-fishes, and most of the univalves, by gills; while in the remainder of the univalves, as snails, slugs, etc., the breathing organs have the form of an air-chamber or pulmonary sac, adapted for breathing air directly. A characteristic of the typical Mollusca is the 'foot' or organ of locomotion, which may be modified so as to perform various offices. Its use in the case of the snail is well known, and in the cockle it is developed to a great size. In some cases (as the razor-shells) it enables the animal to burrow rapidly in the sand; while in the mussels, etc., the organ is devoted to the secretion of the well-known beard or *byssus*, a collection of strong fibrous threads by means of which these animals moor or fix themselves to rocks, etc. In some bivalves (as the oyster) in which the locomotive powers are in abeyance, the foot is rudimentary. In the cuttle-fishes it is represented by the arms or tentacles round the mouth. The chief peculiarity, however, of the Mollusca is in the nervous system, which in the lower forms consists essentially of a single ganglionic mass, giving off filaments in various directions; while in the higher there are three such masses, united to one another by nervous cords. According as they possess one or three ganglia the Mollusca are divided into two great divisions—*Molluscoida*, those having a single ganglion or principal pair of ganglia, and the *Mollusca* proper, possessing three principal pairs of ganglia. The Molluscoida are subdivided into three classes — Polyzōa, comprising the sea-mosses and sea-mats; *Tunicāta*, the sea-squirts; and *Brachiopōda*, of which Lingula and Terebratula (the lamp-shells) are examples. The Mollusca proper are divided into four classes—*Lamellibranchiata*, in which there is no distinct head, comprising mussels, scallops, oysters,

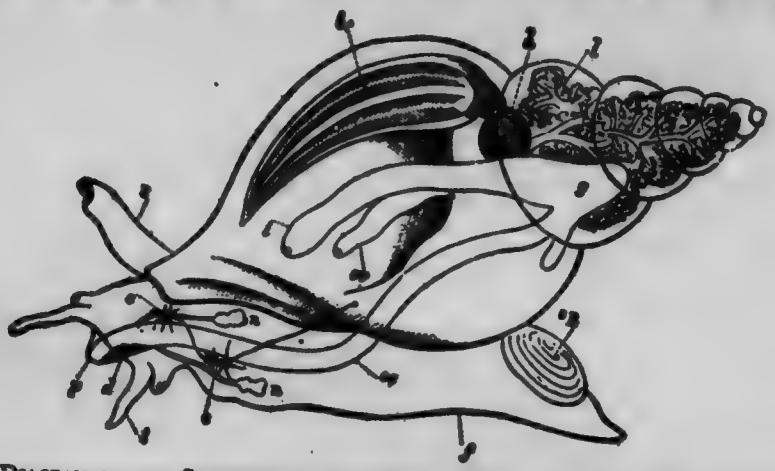
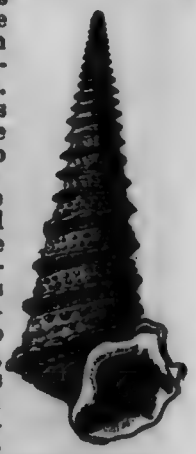


DIAGRAM OF THE STRUCTURE OF A TYPICAL MOLLUSC (THE COMMON WHELK).

f, The muscular foot; *op*, The operculum; *t*, One of the tentacles, or feelers, with an eye at its base; *p*, The proboscis, retracted, with the mouth at its extremity; *oe*, Gullet; *g*, Stomach; *i*, Intestine, terminating in the anus; *n n*, Salivary glands; *l*, The liver and the ovary; *h*, The heart; *bc*, The gill contained in a hood of the mantle; *s*, Breathing-tube or siphon; *c* and *c*, The main nerve ganglia, the one above the gullet being the cerebral ganglia, and the one below the gullet being the combined pedal and parieto-splanchnic ganglia.



Eocene Mollusc (*Crithium tricarinaum*).

etc.; *Gasteropōda*, comprising the land-snails, sea-snails, whelks, limpets, slugs, sea-lemons, etc.; *Pteropōda*, all minute oceanic molluscs with wing-like swimming organs; and *Cephalopōda*, the highest class, comprising the cuttle-fishes, calamaries and squids, in which the shell is small and concealed internally. Some species of Cephalopods become of enormous size as compared with the shelled molluscs. See these headings, also the *Nautilus argonaut*, and other molluscum titles. The Molluscoida are now usually relegated to a distinct sub-kingdom. See different classes and species.

Molluscoida (mol-us-koi'da), or MOLLUSCOIDEA, a group of animals comprising the Polyzoa, Tunicata and Brachiopoda. The nervous system consists of a single ganglion or a principal pair of ganglia, and the heart is wanting or imperfect. This group is regarded by some as a class in the sub-kingdom Mollusca, by others as itself a sub-kingdom. See *Mollusca*.

Molly Maguires, the name assumed by members of a secret illegal association in Ireland, afterwards reorganized in the anthracite coal-mining district of Pennsylvania. The organization was guilty in the latter region of many outrages, and was broken up in 1876, twenty members being hanged for murder.

Moloch (mō'lok), the chief god of the Phœnicians, frequently mentioned in Scripture as the god of the Ammonites, whose worship consisted chiefly of human sacrifices, ordeals by fire, mutilation, etc.

Moloch Lizard, a genus of lizards found in Australia. *M. horridus* (moloch-lizard) is one of the most ferocious-looking, though at the same time one of the most harmless, of reptiles, the horns on the head and the numerous spines on the body giving it a most formidable and exceedingly repulsive appearance.

Molokai (mō-lo-kī'), an island of the Hawaiian group, about 40 miles long by from 7 to 9 broad. It is noted for its settlement of lepers, all persons on the islands found to be affected with the disease being sent by government to Molokai, and kept entirely isolated from the healthy part of the community. Pop. 2581.

Moltke, (molt'ke), ADAM WILHELM (1785-1864), a Danish statesman, born at Einsiedelsborg in Fünen. He became minister of finance in 1831, and on the death of Christian VIII he took a leading part in framing a liberal constitution, bridging the crisis that had come in political affairs. As premier he formed a cabinet that included all parties and forced upon them acceptance of his progressive policies. The constitution was adopted in 1849. He also presided over the third constitutional ministry formed in 1851. He resigned office the following year, but continued to make his great influence felt during the crucial years when the absolute monarchy system gave place to that of a constitutional monarchy. In 1855 he was elected a member of the Rigsraad, holding office till the year before his death. His grandfather, *Adam Gottlob Moltke* (1710-1792) was the favorite of Frederick V and wielded great influence.

Moltke HELMUTH CARL BERNHARD, COUNT VON, a German field-marshal, born at Mecklenburg in 1800; entered the Danish army in 1819: left that service for the Prussian in 1822, and became a staff-officer in 1832. In 1835 he superintended the Turkish military reforms, and he was present during the Syrian campaign against Mehemet Ali in 1839. He returned to Prussia and became colonel of the staff in 1851, and equerry to the crown prince in 1855. In 1858 as provisional director of the general staff he acted in unison with Von Roon and Bismarck in the vast plans of military reorganization soon after carried out. The conduct of the Danish war (1864) was attributable to his strategy, as was also the success of the Austro-Prussian war of 1866, and the Franco-Prussian war of 1870-71. In the latter year he was made field-marshal, and became count in 1872. He retired from the position of chief of the general staff in 1888. He died in 1891. His nephew, Halmuts von Moltke, born in 1848, succeeded to the position of Chief of Staff in 1906; died in 1916.

Moluccas (mō-luk'az), or SPICE ISLANDS, a name originally confined to the five small islands of Ternate, Tidore, Motir, Makian and Batshian, but now applied to the widely scattered group lying between Celebes and Papua, between lat. 3° S. and 6° N., and lon. 126° to 135° E. They are divided into the residences of Amboyna, Banda, Ternate and Menado; the southern portion being governed directly by the Dutch, and the northern indirectly through native sultans. The area is about 21,500 square miles, and the population 430,000. The islands (some hundreds in number) are nearly all mountainous, mostly volcanic, and earthquakes are by no means uncommon. They abound in gaily-colored birds and gorgeous insects; and are covered by a luxuriant tropical flora. Cloves, nutmegs, mace, and sago are exported to Europe; and birds'-nests, trepang, etc., to

China. The Moluccas have been for centuries alternately in the possession of the Spaniards, Portuguese and Dutch. They were twice taken by the British and given up to Holland, in whose possession they still remain. The natives belong to Malay and Polynesian races, and the general language on the coast is the Malay.

Molybdenum (mu-lib'de-num), one of the rare metals, of a white silvery color, harder than topaz, and having a specific gravity of 8.6; atomic weight, 96. It is unaltered in the air at ordinary temperatures, but is oxidized when heated. The alloys of this metal are generally less fusible, more brittle, and whiter than the metal with which the molybdenum is alloyed.

Mombasa (mom-bä'sa), or MOMBAS, a town on the east coast of Africa, in lat. 4° 6′, S., on an island 3 miles long by ½ mile broad, with one of the best harbors on the coast. The island and town now form part of the territory over which the British East African Company received governing rights from the Sultan of Zanzibar in 1888. The town is dirty and unhealthy, but exports millet, Indian corn, ivory, copal, sesamum (oil-seed), etc. Pop. about 30,000. On the mainland opposite is Freretown, a settlement of the Church Missionary Society.

Moment of Inertia, the sum of the products of each particle of a rotating body, by the square of its distance from the axis of rotation, thus indicating the exact energy of rotation.

Momentum (mō-men'tum), the quantity of motion of a moving body, measured as the product of the body's mass and its velocity. The unit quantity of momentum most commonly employed is that possessed by a body of the mass of 1 lb. moving with a velocity of 1 foot per second. The C.G.S. unit (see *Dynamics*) is the momentum possessed by a body of the mass of 1 gramme moving with a velocity of 1 centimeter per second.

Mommsen (mom'sen), THEODOR, a German scholar and historian, born in 1817. He was appointed professor of jurisprudence at Leipsig in 1848, professor of Roman law at Zürich in 1852; obtained a similar chair at Breslau in 1854; in 1858 went to Berlin as professor of ancient history. His best-known work is a history of Rome, which has been translated into English; but he has also published many other works on Roman history, law, and antiquities. He died in 1903.

Mömpelgard. See *Montbéliard*.

Mompox (mom-pōks'), MOMPOS, a town of Colombia, on the Magdalena, 125 miles south of Baranquilla. Founded in 1538, it was at one time of considerable commercial importance, but the capricious changes of the river's course have seriously injured its prosperity. Pop. 10,000.

Momus (mō'mus), the god of mockery and censure among the ancients was the son of Night. He was expelled from heaven for his free criticism of the gods. Momus is generally represented raising a mask from his face, and holding a small figure in his hand.

Mona (mō'na), the ancient name of the island of Anglesea and the Isle of Man.

Mona (*Cercopithecus mona*), a monkey, sometimes called the *variegated monkey*, because its fur is varied with gray, red, brown and green. It is often brought to Europe, and is easily tamed.

Monachism (mon'a-kizm). See *Monastery* and *Orders* (*Religious*).

Monaco (mon'a-kō), a principality lying between the French department Alpes Maritimes (Nice) and the Mediterranean. In 1861 the Prince of Monaco sold the departments of Mentone and Roccabruna to France for 4,000,000 francs; and the principality has since then been confined to an area of about 8 square miles, with a pop. of about 15,180. The prince (a scion of the house of Grimaldi) exercises both legislative and executive functions, while the people are exempt from taxation, as the revenue is almost entirely derived from the rents of the gaming establishment. The capital, Monaco (pop. about 3292), situated on a rocky height projecting into the sea, is a renowned watering-place. About a mile to the E. is Monte Carlo, a collection of hotels and villas which have sprung up near the luxurious gardens of the handsome gambling casino, established here in 1860. This institution is now the property of a joint-stock company. The inhabitants of Monaco (*Monégasques*) are not admitted to the gaming tables.

Monad (mon'ad), in philosophy, an imaginary entity in the philosophy of Leibnitz, according to whom monads are simple substances, of which the whole universe is composed, each differing from every other, but all agreeing in having no extension, but in being possessed of life, the source of all motion and activity. Every monad, according to Leibnitz, is a soul, and a human soul is only a monad of elevated rank.

Monad, the term applied to certain minute infusorial organisms of

a low type of organisation, consisting each of a little speck of protoplasmic matter furnished with a vibratile filament or *cilium*, and making their appearance in putrescent fluids.

Monaghan (mon'a-gan), a county of Ulster, Ireland, area 497 sq. miles. The surface is hilly, and abounds with small lakes and bogs. Monaghan is the county town. Agriculture and the manufacture of linen are the chief industries. Pop. 74,611.

Monarchianism (mo-när'ki-an-izm), a name given to the tenets of those who, before and during the 3rd century A. D., opposed the rapidly developing doctrine of the Trinity as endangering or violating the *monarchia* (unity and supremacy) of God. They are usually divided into two classes: (1). Dynamistic or Adoptionistic Monarchians, who regarded Jesus as a human personality, 'adopted' by the Father. (2) The Modalistic or Patripassian Monarchians, who rationalized the Trinity as but the modes in which God revealed himself.

Monarchy (mon'ar-ki) is a state or government in which the supreme power is either actually or nominally vested for life in a single person, by whatever name he be distinguished. A monarchy in which the subjects have no right or powers as against the monarch is termed *despotic* or *absolute;* when the legislative power is wholly in the hands of a monarch, who, however, is himself subject to the law, it is termed *autocratic;* but when the monarch shares the power of enacting laws with representatives of the people, the monarchy is *limited* or *constitutional* (*e.g.*, Great Britain). In ancient Greece, a monarchy in which the ruler either obtained or administered his power in violation of the constitution was termed a *tyranny*, however beneficent the rule might be.

Monastery (mon'as-tèr-i), a house into which persons retire from the world to lead a life devoted to religion. The practice of monachism or monastic seclusion, though it has been carried to its greatest development within the Christian Church, had its origin in periods long anterior to the Christian era, and has long flourished in countries where Christianity has little or no influence, as among the Brahmans and Buddhists. Christianity was probably not without its ascetics even from the first, but it was not until the close of the third century, when the Neo-Platonic and Gnostic doctrines of the antagonism between body and soul had gained strength, that solitary life began to be specially esteemed. The foundation of the first Christian monasteries is ascribed to Anthony the Great, who about 305, in the deserts of Upper Egypt, collected a number of hermits, who performed their devotional exercises in common. His disciple Pachomius, in the middle of the fourth century, built a number of houses not far from each other, upon the island of Tabenna, in the Nile, each of which was occupied by three monks (*synceiti*) in cells, who were all under the superintendence of a prior. These priors formed together the *cœnobium*, or monastery, which was under the care of the abbot, hegumenos or mandrite, and were obliged to submit to uniform rules of life. At the death of Pachomius, after 348, the monastic colony at Tabenna amounted to 7000 persons. His *rule* or monastic system continued to spread rapidly, reaching even Italy, where it was introduced by Athanasius, and thence extending to other western lands, until it was there superseded by the rule of St. Benedict. In the East it finally gave way to the rule of St. Basil, founded about 375.

Under the Pachomian rule there was not anything more than a tacit renunciation of the world. St. Basil imposed a stricter discipline upon the monasteries that embraced his rule; but Western monasticism, which rapidly spread during the fifth century, was accompanied by many irregularities, until monastic vows were introduced in the sixth century by St. Benedict. The monasteries of the West now became the dwellings of piety, industry, and temperance, and the refuge of learning. Missionaries were sent out from them; deserts and solitudes were made habitable by industrious monks; and in promoting the progress of agriculture and converting the German and Slavonic nations they certainly rendered great services to the world from the sixth century to the ninth. Another incalculable benefit conferred upon civilization by the monasteries is the preservation of nearly the whole of the classic and mediæval MS. literature that we possess.

But monasteries changed their character, to a great degree, as their wealth and influence increased. Idleness and luxury crept within their walls, together with all the vices of the world, and their decay became inevitable, when, by a custom first introduced by the Frankish kings, and afterwards imitated by other princes, they came under the care of lay abbots or superiors, who, thinking only of their revenues, did nothing to maintain discipline among the monks and nuns. These being left wholly to their own government by the bishops, originally their overseers, soon lost their monastic zeal. A few only,

by means of the convent schools (founded by Charlemagne for the education of the clergy), as, for instance, those at Tours, Lyons, Rheims, Cologne, Trèves, Fulda, etc., maintained their character for usefulness till the ninth and tenth centuries. The monastery at Cluny, in Burgundy, first led the way to reform. This was founded in the year 910, under Berno, was governed by the rules of St. Benedict, with additional regulations of a still more rigid character; and attained the position, next to Rome, of the most important religious center in the world. Many monasteries in France, Spain, Italy and Germany were reformed on this model, and the Benedictine rule now first became prominent in Britain through the instrumentality of Dunstan. The Celtic and other monasteries of Britain and Ireland heretofore seem to have had an independent historical connection with the early monachism of Egypt. The reforming spirit also gave birth to so many new orders or modifications of the Benedictine rule (such as the Carthusians and Cistercians), that in 1215 the Lateran Council forbade the formation of any new order. The prohibition, however, was not obeyed. The three great military orders (Templars, Hospitallers and Teutonic Knights) were founded in the twelfth century; while the famous mendicant orders of the Franciscans and Dominicans date from the thirteenth. With the reputation of renewed sanctity the monasteries acquired new influence and new possessions. Many of them ('exempt monasteries') released themselves from all superintending authority except that of the pope, and acquired great wealth in the time of the Crusades from the estates of Crusaders and others placed under the protection of their privilege of inviolability, or even left to them in reversion. But with this growing influence the zeal for reformation abated; new abuses sprang up, and the character of each monastery came, at last, to depend chiefly upon that of its abbot.

The number of monasteries was much diminished at the time of the Reformation, when the rich estates of those in Protestant states were in part appropriated by the sovereign to his own use, in part distributed to nobles and ecclesiastics, and in part devoted to educational and benevolent purposes. In Catholic countries this period was marked by a revival of the spirit of monastic reform; while many new orders were founded whose objects were more directly practical (teaching, tending the sick, visiting the poor) than those of the older and more contemplative orders. Monachism, however, as belonging to the older system of things, was regarded with hostility by the spirit of rationalism and liberalism which found decisive expression in the French Revolution; and during the eighteenth century the monastic orders were obliged, as the papal power diminished, to submit to many restrictions imposed upon them by Catholic princes, or to purchase immunity at a high price. In 1781 the houses of some orders were wholly abolished by the Emperor Joseph II, and those suffered to remain were limited to a certain number of inmates, and cut off from all connection with any foreign authority. In France the abolition of all orders and monasteries was decreed in 1789, and the example was followed by all the states incorporated with France under the protection of Napoleon I. In the nineteenth century, however, under Napoleon III, and during the early years of the republic, monachism prospered in France, though since 1880 only monasteries authorized by the state are permitted to exist. In Germany all orders except those engaged in tending the sick were abolished in 1875. The unification of Italy was followed by a series of decrees pronouncing all monastic orders illegal. In Portugal monasteries were abolished by decree in 1834, and in Spain in 1837. A severe attack was made on them in Portugal in the revolution of 1910. In Russia the number of such institutions is strictly limited by law. In the states of South America the same policy of abolition has been adopted; whereas in the United States and Canada several orders have made considerable progress. Protestantism has never favored monachism, but in the Episcopal churches of England and America 'sisterhoods' and 'brotherhoods' (especially the former) have been formed at various times, generally with some philanthropic or charitable object. In the Eastern or Greek Church all nuns and the great majority of monks belong to the Basilian order. Some monasteries, including the famous monastery of Mount Sinai, obey the rule of St. Anthony. Monastic institutions for women, usually spoken of as convents or nunneries, date in their earliest form from about the middle of the third century. (See *Nun.*) For the monastic vows see the next article; for further information, see *Orders* (*Religious*), *Abbey*, etc.

Monastic Vows (mon-as'tik vous) are three in number—poverty, chastity and obedience. The vow of poverty prevents the monks from holding any property individually. Monasteries, however, professing merely the 'high' degree of poverty may possess

real estate, yet not more than enough for their support, as the Carmelites and Augustines. In the 'higher' degree a monastery may hold only personal property, as books, dresses, supplies of food and drink, rents, etc., as the Dominicans. The 'highest' degree absolutely forbids both real and personal property, as is the case with the Franciscans, and especially the Capuchins. The vow of chastity requires an entire abstinence from familiar intercourse with the other sex; and that of obedience entire compliance with the rules of the order and the commands of the superior.

Monastir (mon-as-tēr'), or BITOLIA, a city of southern Servia, captured from Turkey in the Balkan war; 87 miles W. N. W. of Salonica. It is an active manufacturing city. Pop. 60,000.

Monazite (mon'a-zīt), an anhydrous phosphate of cerium, lanthanum, didymium and thorium; found in gravel deposits in N. and S. Carolina and elsewhere. These salts are among the most refractory substances known and therefore of much value in making incandescent gas mantles.

Moncalieri (mon-kä-lyā're), a community of Italy, on the Po, 5 miles S. of Turin. Matches and bricks are made. Pop. 12,000.

Moncton (munk'tun), a city of New Brunswick, Canada, on the Canadian Pacific R. R., 89 miles N. E. of St. John. It is at the head of navigation on the Petitcodiac River, has a good harbor and manufactures of wooden ware, stoves, cotton and woolen goods, etc. Pop. (1911) 11,345.

Monday (mun'dā; that is, *moon-day;* Anglo-Saxon, *Monandæg;* German, *Montag*), the second day of our week, formerly sacred to the moon.

Mondonedo (mon-dōn-yā'do), a cathedral city near the northwest corner of Spain, province Lugo. Pop. about 10,590.

Mondovi (mon-dō'vi), a town in N. Italy, province of Cuneo, 33 miles west of Genoa. It is walled and defended by a dilapidated citadel. It has a fine cathedral. Pop. 19,000.

Monessen, a borough in Westmoreland county, Pennsylvania, on the Monongahela River. It has manufactures of steel and iron. Pop. 19,000.

Monet (mō-nā'), CLAUDE, French impressionist painter, was born in Paris in 1840. He studied art for some time in the studio of Gleyre, and in 1869 joined the group of Cézanne, Degas, Duranty, Sisley, and became a *plein air* painter, excelling in the delineation of subtle gradations of light.

Money (mun'i), in its ordinary sense, is equivalent to pieces of metal, especially gold and silver, duly stamped and issued by the government of a country to serve as a legalized standard of value. In this sense it is more precisely designated *metallic* money, to distinguish it from *paper* money, from which latter it is also distinguished by having an intrinsic value. A few particulars regarding money may here be given as supplementary to information contained in the articles *Currency, Coining, Bank,* etc. The sovereign and half sovereign are the legal metal standard of value in the United Kingdom and most of the British colonies, and the gold dollar in the United States. By the Latin Monetary Convention, which includes France, Belgium, Italy, Switzerland and Greece, it has been agreed that the gold napoleon and the silver five-franc piece—or corresponding pieces—are to be exchangeable throughout these countries as their standard money; while by the Scandinavian Monetary Convention, which includes Norway, Sweden and Denmark, the gold 20-kroner and 10-kroner pieces are the standard coins. These contracting states have thus agreed to issue no gold or silver coins except of a certain weight, fineness, and diameter. In Germany the 5-mark, 10-mark, and 20-mark pieces are the standard units; while in Austria the silver florin, and in Russia the silver rouble, are the recognized standard coins. *Moneys of account* are those denominations of money in which accounts are kept, and which may or may not have a coin of corresponding value in circulation. In England the pound sterling may be said to be purely a money of account, although there is a coin, the sovereign, of corresponding value. The money unit in various countries is as follows:—United States, the dollar; Britain, the pound sterling; Belgium, France and Switzerland, the franc; Germany, the mark; Austria-Hungary, the florin; Russia, the rouble; Italy, the lira; Spain, the peseta; Sweden, Norway and Denmark, the krona; Holland, the guilder; Portugal, the milreis; Greece, the drachma; Turkey, the piastre; Brazil, the milreis; India, the rupee; China, the liang or tael; Japan, the yen.

Monge (monzh), GASPARD, a French mathematician and natural philosopher, born in 1746; died in 1818.

Monghyr, or MONGHIR (mon-gēr'), a district and town of India, in Bengal. The district, which has an area of 3921 sq. miles, is intersected from east to west by the Ganges. The town stands on the Ganges, 80 miles east of

Patna. It is of considerable antiquity, and has a fort which now contains the public buildings and the bungalows of the European residents. Monghyr, owing to the salubrity of its climate, is a favorite residence of invalid military men and their families. Pop. (1911) 46,913.

Mongolia (mon-gō'li-a), a vast region of the northeast of Asia, belonging to the Chinese Empire, is situated between China proper and Asiatic Russia; estimated area, 1,400,000 sq. miles. It is in great part an extended plateau, lying at an elevation of 2500 to 3500 feet. A great part of it is occupied by the Desert of Gobi or Shamo, and on or near its borders are lofty mountain chains, the principal of which are the Altai, the Sayunak, the Khinghan and the Inshan. The inhabitants (estimated at 5,000,000) lead a nomadic life. They possess large herds of cattle, sheep and horses. The climate is in sections intensely hot in summer and bitterly cold in winter.

Mongols, a race of people in the northeast of Asia, whose original seat seems to have been in the north of the present Mongolia, and in Siberia to the southeast of Lake Baikal. Their first great advance was due to Genghis Khan, who having been, originally, merely the chief of a single Mongol horde, entered upon a career of conquest, compelled the other hordes to submit to his power, and then, in 1206, conceived the bold plan of conquering the whole earth. (See *Genghis Khan.*) After the death of Genghis Khan, in 1227, his sons and grandsons pursued his conquests, subjugated all China, subverted the caliphate of Bagdad (1263), and made the Seljuk sultans of Iconium tributary. In 1237 a Mongol army invaded Russia, devastated the country with the most horrible cruelty, and from Russia passed, in two divisions, into Poland and Hungary. At Pesth the Hungarian army was routed with terrible slaughter, and at Liegnitz, in Silesia, Henry, duke of Breslau, was defeated in a bloody battle, April 9, 1241. The Mongols were recalled, however, from their victorious career by the news of the death in December, 1241, of Ogdai, the immediate successor of Genghis Khan. The empire of the Mongols was at the summit of its power during the reigns of Mangu Khan (1251-59) and Khubilai, or Kublai Khan (1259-94), the conqueror of China and the patron of Marco Polo. At that time it extended from the Chinese Sea and from India far into the interior of Siberia, and to the frontiers of Poland. The principal seat of the *khaken* or great khan was transferred by Khubilai from Karaborum to China; the other countries were governed by subordinate khans, all of whom were descended from Genghis, and several of whom succeeded in making themselves independent. This division of the empire was the cause of the gradual decay of the power and consequence of the Mongols in the fourteenth century. The adoption of new religions (Buddhism in the east and Mohammedanism in the west) also contributed to their fall. In 1368 the empire of the Mongols in China was overturned by a revolution which set the native Ming dynasty on the throne. Driven northwards to their original home, the eastern Mongols remained for a time subject to the descendants of Genghis Khan, but gradually splitting up into small independent tribes, they finally were subdued and absorbed by the Manchu conquerors of China. Of the western Mongols the most powerful were the Kipchaks, or Golden Horde, who lived on the Volga, and the khanate founded in Bokhara, on the Oxus, by Jagatai, the eldest son of Genghis Khan. The former gradually fell under the power of the Russians; but among the latter there appeared a second formidable warrior, Timurlenk (Tamerlane), called also Timur Beg. In 1369 he chose the city of Samarcand for the seat of his new government, the other Mongol tribes, with Persia, Central Asia and Hindustan, being successively subjugated by him. In 1402, at Ancyra (Angora), in Asia Minor, he defeated and captured the Sultan Bajazet I, who had been hitherto victorious against the Christians in Europe, and before whom Constantinople trembled. After Timur's death, in 1405, his empire barely held together until 1468, when it was again divided. Baber (Babur), a descendant of Timur, founded in India, in 1519, the empire of the Great Mogul, which existed in name till 1857, though its power ended in 1739. (See *India.*) After the commencement of the sixteenth century the Mongols lost all importance in the history of the world, became split up into a number of separate khanates and tribes, and fell under the power of the neighboring peoples. Their name still lingers in the Chinese province of Mongolia (see above), but Mongolian tribes are found far beyond its boundaries.

The term Mongolians or Mongolidæ is to some extent used by anthropologists to signify a very large division of the races of men, of which the Mongols proper were considered typical. This use of the name, which includes Tartars, Turks, Finns, Chinese and Japanese, is to be carefully distinguished from the historical use.

Mongoose. See *Mungoose.*

Monica (mon'i-ka), St., mother of St. Augustine, was born in Africa, of Christian parents, in 332. The grief of her life was the worldliness and long heresy of her great son; but she was miraculously assured by a dream of his conversion, and was informed by an aged bishop that 'the child of so many tears could not be lost.' With her other son, Navigius, she followed Augustine to Italy, where she died May 4, 387, at Ostia. Her festival is May 4.

Monier-Williams (m ō' n i -er-wil'-lams), Sir Monier, orientalist, born in 1819 at Bombay, where his father, Col. Monier-Williams, held the post of surveyor-general. He was graduated at King's College, London, and Baliol and University colleges, Oxford. He was professor of Sanskrit at Haileybury from 1844 to 1858, and in 1860 became Boden Sanskrit professor at Oxford. His writings include a grammar and a dictionary of Sanskrit, *Hinduism, Modern India, Religious Thought and Life in India,* etc. He traveled extensively in India, and was knighted in 1886. He died in 1899.

Monism (mon'izm), the doctrine that there is only one ultimate principle of being instead of two—mind and matter—as held in *dualism.* Monism may be *idealistic,* explaining matters as a modification of mind, or *materialistic,* explaining mind as an outcome of material energy, or *pantheistic,* referring matter and mind to one original substance.

Monitor (mon'i-tur), the type of a family of lizards (Varanidæ). They are the largest of the Lizard order, some species, such as the *Varanus Niloticus* of the Nile and Egypt, attaining a length of 6 feet. They generally inhabit the neighborhood of rivers and lakes, and feed upon the eggs of crocodiles, turtles, and those of aquatic birds. The name is owing to the belief formerly entertained that these lizards gave warning of the approach of crocodiles.

Monitor, the popular name for a class of very shallow, heavily-armed iron-clad steam-vessels lying very low in the water and carrying on their open decks either one or two revolving turrets, each containing one or more enormous guns, and designed to combine the maximum of gun-power with the minimum of exposure. Monitors are so called from the name of the first vessel of the kind, invented and built in New York by John Ericsson at the beginning of the Civil war, and indicating its powers in the famous engagement with the *Merrimac* in 1862, the first battle between iron-clad war vessels.

Monk (mungk), a man who retires from the world to live in a monastery as member of some religious order. Originally all monks were laymen, but after about the eighth century the superiors, and by degrees other members, were admitted to holy orders. See *Monastery* and *Orders* (*Religious*).

Monk, George, Duke of Albemarle, an English general, famous for the prominent part he took in the restoration of Charles II, was born in 1608. At the age of seventeen he volunteered as a private soldier in the expedition to Cadiz. In the struggle between Charles I and the parliament he at first joined the royalists and was taken prisoner. After the capture of the king Monk took the Covenant and regained his liberty, in 1646. Under the parliament he served in Ireland, and

General Monk.

subsequently with Cromwell in Scotland, and in 1650 he reduced that country to obedience within a few weeks. In 1653 he assisted Admiral Dean in inflicting two severe naval defeats on the Dutch under Van Tromp the elder. Next year he was placed at the head of the English army in Scotland, and he was still in this position at the death of the Protector and at the resignation of his son in 1659. Monk had always been regarded with hope by the royalist party, and he seems to have decided at once upon the restoration, although he used dissimulation and deceit to avoid committing himself either one way or the other until he was tolerably sure of success. The coming over of Charles II was arranged with Monk, and the king rewarded his restorer with the dukedom of Albemarle, the order of the Garter, and with a pension of £7000 a year. Monk now fell into comparative

obscurity. In 1666, however, he once more served against the Dutch at sea, defeating Van Tromp the younger and De Ruyter. He died in 1670, and was buried in Westminster Abbey.

Monkey-bread. See *Baobab*.

Monkey-cup, a name applied to the pitcher-plants.

Monkey-pot, the name given to the fruit of *Lecythis ollaria*, a large Brazilian forest tree. It consists of a hard capsule furnished with a lid, and containing seeds of which monkeys are fond.

Monkey (mung'ki), the popular name applied sometimes to the whole of Cuvier's mammalian order Quadrumana, sometimes limited to those of the order that have tails, and generally cheek pouches, to the exclusion of the apes, baboons and lemurs. The general characters of the mammals of this order are found in the great toe being opposable to the other digits of the foot, so that the feet seem to be converted into 'hands.' The hallux or thumb may be absent, but when developed it is generally opposable to the other fingers; and the animals are thus claimed to possess 'four hands,' or are 'quadrumanous.' This supposed anatomical distinction from man is not maintained by later naturalists. The monkeys may all be divided into a lower and a higher section. The higher section is that of the *Catarhina* (Greek, *kata*, downwards, and *rhines*, nostrils) or Old World monkeys. The catarhine monkeys are distinguished by their obliquely-set nostrils, the nasal apertures being placed close together, and the nasal septum being narrow. Opposable thumbs and great toes exist in nearly all. The tail may be rudimentary or wanting, but in no case is it prehensile. Cheek-pouches, which are used as receptacle for food preparatory to its mastication, are present in many; and the skin covering the prominences of the buttocks is frequently destitute of hair, becomes hardened, and thus constitutes the so-called *natal callosities*. The catarhine monkeys inhabit Asia and Africa. They include the anthropoid or man-like apes; the gibbons, the orang, the chimpanzee and the gorilla; also the baboons and mandrills, the sacred monkey of the Hindus, the proboscis monkey, the Diana monkey, the mona, the wanderoo, etc. The lower section of monkeys consists of the *Platyrhina* (Greek, *platus*, broad; *rhines*, nostrils), or New World monkeys, which are entirely confined to South America. They have the nostrils widely separated, the septum or partition between being broad, hence the name. Another peculiarity consists in their prehensile tails; and there are none of the cheek-pouches or hard callosities on the rump so characteristic of Old World monkeys. The diet is especially of a vegetable nature. This section includes the marmosets, the spider-monkeys, the capuchin monkeys, the squirrel-monkeys, the howling monkeys, etc. See *Apes*, *Baboons*, etc.

Monk-fish. See *Angel-fish*.

Monk-seal. See *Seal*.

Monk's-hood. See *Aconite*.

Monmouth (mon'muth; Welsh, *Mynwy*), a borough of England, the county town of Monmouthshire, is situated in a beautiful valley at the confluence of the Monnow and Wye. The Monnow is here spanned by an ancient stone bridge, and the Wye by a modern one. Monmouth has malleable iron and tin-plate works, paper and corn mills, etc. The castle, of which only fragments remain, was a favorite residence of John of Gaunt, and the birthplace of Henry V. Monmouth, with Newport and Usk, sends a member to parliament. Pop. 5269.—The county lies north of the Bristol Channel and the estuary of the Severn; area 535 sq. miles. A considerable portion of the surface is mountainous and rocky, the remainder consisting of fertile valleys and gentle slopes. The chief rivers are the Wye, the Monnow, the Usk, the Ebbw, and the Rhymney. The production of coal and iron is extensive. Pontypool, Blaenavon, Tredegar, Ebbw, Vale and Rhymney are the headquarters of the coal and iron industries. The manufacture of tin-plate is also extensively carried on. Among the antiquities of the county are remains of Llanthony and Tintern Abbeys, and the fine Norman castle of Chepstow. Pop. 395,778.

Monmouth, JAMES, DUKE OF, the natural son of Lucy Walters, one of the mistresses of Charles II, was born at Rotterdam in 1649, and was always acknowledged by Charles as his natural son, though there were doubts of his paternity. After the Restoration he was created Duke of Orkney and Duke of Monmouth (1663), married the daughter and heiress of the Earl of Buccleuch, and received the Garter. His handsome person, affable address, and distinguished valor obtained him much popularity, but his education was defective, and his capacity mean. It was reported that the king had been privately married to Lucy Walters, and the popular dislike of the Duke of York, afterwards James II, joined with the fact of

Monmouth being a Protestant, gave occasion to hopes that her son might succeed to the crown, though the king expressly declared that the Duke of Monmouth had no claims to legitimacy. In 1679 Monmouth was intrusted with a command in Scotland, and defeated the Covenanters at the battle of Bothwell Bridge, June 22, but was soon afterwards sent beyond seas at the instigation of his uncle. A few months afterwards he returned without leave, and became the center of the popular movement in which the lives of Lord William Russell and Algernon Sidney were sacrificed. The result to Monmouth was his exile in Holland. On the accession of James II he was induced to attempt an invasion of England. He arrived at Lyme Regis with less than a hundred followers (June 11, 1685), but his numbers were soon increased. He proclaimed James the poisoner of the late king, and asserted the legitimacy of his own birth; but from the first there was no likelihood of his success. His small body of undisciplined troops were totally defeated at Sedgmoor, and the duke himself was captured and beheaded July 15, 1685, after abject appeals to the king for mercy.

Monmouth, a city of Illinois, capital of Warren County, 15 miles W. by S. of Galesburg. Coal is found in the vicinity and it has manufactures of pottery and sewer pipe, ploughs, soap, cigars, etc. Here is Monmouth College (United Presbyterian). Pop. 9128.

Monochord (mon'u-kord), a musical instrument with one string, much employed by the ancients in the musical training of the voice and ear. The string, stretched over a board or sounding-box, emits a musical note on being caused to vibrate. The length of the vibrating part of the string may be altered at will by means of a movable bridge, and the relative pitch of the different notes thus produced compared. A modified, or rather developed, form of the instrument is employed to exhibit the law of vibrating strings, and also to illustrate the relations of harmonies and the fundamental ideas of undulations.

Monochrome (mon'u-krōm), a painting executed in a single color. This description of art is very ancient, and was known to the Etruscans. The most numerous examples existing of this kind of painting are on terra cotta. A painting, to be a proper monochrome, must have the figures relieved by light and shade.

Monocotyledon (mon-ō-kot-i-lē'don), a plant with only one cotyledon or seed-lobe. The Monocotyledons form one of the two great classes into which the phanerogamous or flowering plants are divided. See *Endogenous Plants, Botany.*

Monodelphia (mon-u-del'fi-a), one of the three subclasses into which mammals were divided by M. Blainville in 1816 in accordance with the nature of their reproductive organs, the other two classes being Ornithodelphia and Didelphia. The Monodelphia are characterized by the fact that the uterus or womb is single, and shows a single uterine cavity. This subclass corresponds with the 'Placental' mammals, and includes all the Mammalia except the monotremes and marsupials.

Monœcious (mu-nē'shus), in botany, having male flowers and female flowers on the same individual plant; opposed to *diœcious.*

Monogram (mon'u-gram), a character or cipher composed of one, two, or more letters interwoven, and used as a sign or abbreviation of a name or word. The use of monograms was common among the Greeks and Romans, and the art of combining and contorting letters and words flourished universally in the middle ages. The term is now applied to conjoined initials of a personal name on seals, trinkets, letter-paper and envelopes, etc., or employed by printers, painters, engravers, etc., as a means of distinguishing their work.

Monograph (mon'u-graf), a work in which a particular subject in any science is treated by itself, and forms the whole subject of the work. Monographs have contributed much to our knowledge, especially in the department of the natural sciences.

Monolith (mon'u-lith), a pillar, statue, or other large object cut from a single block of stone. The obelisks of Egypt are well-known examples.

Monomania (mon-u-mā'ni-a), the name given by some physicians to that form of mania in which the mind of the patient is absorbed by one morbid idea or impulse, and the person seems to be insane only in one direction. Dipsomania and kleptomania are regarded as two varieties of monomania.

Monometallism (mon-u-met'al-ism), the principle of having only one metallic standard in the coinage of a country; opposed to *bimetallism.*

Monongahela (mō-non-ga-hē'la), a river of the United States, formed by the union of West Fork and Tygart's Valley in West Virginia.

runs north into Pennsylvania, and unites with the Allegheny, at Pittsburgh, to form the Ohio. It is navigable for large boats 60 miles, and for small boats 200 miles from its mouth. Its length is 300 miles.

Monongahela, a city of Washington County, Pennsylvania, on the river of the same name, 32 miles s. of Pittsburgh. It has coal mines, iron and glass works, paper mills, etc. Pop. 7598.

Monopetalous (mon-u-pet'a-lus), in botany, having the petals united together into one piece by their edges; otherwise called *gamopetalous*.

Monophysites (mu-nof'i-sits), those who maintained that there was but one nature in the incarnate Christ, that is, that the divine and human natures were so united as to form but one *nature*, yet without any change, confusion, or mixture of the two natures. They were condemned as heretics by the Council of Chalcedon in 451. The Eastern and Egyptian clergy were inclined to the Monophysite doctrine, while the Western church contended for the decree of the council. After long and often bloody contests, the orthodox church succeeded in overawing the heresy in the first half of the sixth century. In Egypt, Syria and Mesopotamia the Monophysite congregations, however, remained the strongest, had patriarchs at Alexandria and Antioch, existing, without interruption, by the side of the imperial orthodox patriarchs; and after Jacob Baradæus, had, about 570, established their religious constitution, formed the independent churches of the Jacobites and Armenians, which have maintained themselves ever since. The Coptic Christians of Egypt and the Abyssinian Church are also Monophysites in doctrine.

Monoplane (mon'o-plān), an aeroplane, or heavier than air flying machine, which has a single gliding board, in distinction to the *Biplane*, or double-plane machine. See *Aeroplane*.

Monopoli (mo-nop'ō-lē), a seaport of South Italy, on the Adriatic, in the province and 25 miles E. S. E. of Bari. It has a cathedral, manufactures of woolen and cotton cloth, and a trade in wine and olives. It is the residence of an archbishop. Pop. 22,616.

Monopoly (mu-nop'o-li) is an exclusive right, conferred by authority on one or more persons, to carry on some branch of trade or manufacture. The monopolies most frequently granted were the right of trading to certain foreign countries, of importing or exporting certain articles, or of exercising particular arts or trades. The entire trade and industry of the middle ages was characterized by attempts to erect and maintain monopolies, as evidenced by the trade-guilds and such associations as the Hanseatic League. The discovery of the New World only provided a fresh sphere for the same system; for not only did every government endeavor to monopolize the trade of its colonies, but in nearly every case the new countries were opened up by privileged 'adventurers' and jealous monopoly companies. The granting of monopolies has at all times been opposed to the spirit of English common law, but the practice was very common previous to the accession of the Stuarts. The abuse reached its height under Elizabeth. In most countries there are certain so-called government monopolies maintained on various grounds of public policy. Examples of such monopolies are the postal and telegraph service, the tobacco monopoly in France, the opium monopoly in India, the salt monopoly in Italy, etc. The only government monopoly in the United States is the Post Office. Patents and copyrights granted to individuals are monopolized during the term of their existence. There are also numerous quasi-monopolies, such as those enjoyed by railway, water, and gas companies, and similar semipublic organizations. The monopolies known as trusts, or business organizations, are viewed with great disfavor by the people, and laws have recently been passed to control their operations, and in some instances, where they seemed in illegal restraint of trade, their dissolution has been decreed.

Monorail (mon'u-rāl), a railway consisting of a single rail. Two types of these are in use: (1) An overhead rail, from which the car hangs, with a wheel running on the rail. (2) The gyroscope railway, in which the car is kept erect on a single rail by the use of revolving gyroscopes. See *Gyroscope Railway*.

Monosepalous (mon-u-sep'a-lus), in botany, having the sepals united together into one piece by their edges; otherwise called *gamosepalous*.

Monotheism (mon'ō-thē-izm), the belief in, and worship of, a single, personal God; opposed to polytheism and distinct also from pantheism. It was at one time the received opinion that monotheism was the primeval intuitive form of religion, but most recent authorities now hold that it was everywhere posterior to polytheism, whence it was evolved by a gradual education. *Henotheism*, which Max Müller and Schel-

ling maintain to be the primeval form, is merely the rudimentary phase of polytheism in minds not yet conscious of the complexity of the problems for which polytheism is suggested as the solution by more developed intellects. The three great modern monotheistic religions are Judaism, Christianity, and Mohammedanism. The Jewish prophets had a firm persuasion of one God, the Father and Judge of all; but they are continually upbraiding the people for lapsing into polytheism. After the Babylonish captivity the people became fixed in their belief. Christian monotheism is, of course, historically a development of Hebrew monotheism; and Mohammed probably borrowed the doctrine from the same source. Both Jew and Mohammedan regard the Trinitarian conception of Deity as a deviation from the pure doctrine of monotheism.

Monothelites (mo-noth'e-lits), a sect of heretics who maintained that Christ had but *one will* (Gr. *monos*, single, *thelein*, to will). Their doctrine was the logical extension of the heresy of the Monophysites, who were all Monothelites. The sect rose into prominence in the seventh century, but a synod of the Lateran formally adopted the opposite doctrine of dyothelism, which has since been the orthodox doctrine in both the Western and the Eastern churches. The heresy, which at once caused a great commotion in the church, gradually became extinct except in the Monophysite churches.

Monotremata (mon-u-trē'ma-ta), the lowest subclass of Mammalia, corresponding to the *Ornithodelphia* of De Blainville, having only one common cloacal outlet for the fæces and the products of the urino-genital organs, in this respect as well as others, noticeably in producing eggs, resembling birds. The jaws have no teeth, at most having horny plates which serve the same purpose. There are no external ears. This subclass includes but two genera, *Ornithorhynchus* and *Echidna*. The former has but one species, the *Ornithorhynchus paradoxus*, or duck-billed watermole of Australia; the latter genus includes two species, the *Echidna hystrix*, or porcupine ant-eater of Australia, and the *E. setosa* of the same country. See *Ornithorhynchus* and *Echidna*.

Monotype (mon'o-tip), a system for casting and setting type by machine, setting each character separately. See *Typesetting Machines*.

Monreale (mon-rā-ä'la), or MORREALE, a town in Sicily, in the province and 5 miles W. S. W. of Palermo. It originally sprang up around the magnificent cathedral and Benedictine convent founded here in the beginning of the twelfth century by the Norman Prince William II. Pop. (commune) 23,778.

Monro (mon-rō'), ALEXANDER, distinguished as 'Primus' or first, anatomist and founder of the Edinburgh Medical School, was born in London in 1697; died in 1767; studied in Edinburgh, afterwards in London under Cheselden, in Paris under Bouquet, and at Leyden under Boerhaave. After his return in 1719 he became demonstrator in anatomy and surgery in Edinburgh University, and in 1725 obtained the chair of anatomy and surgery. He took an active part in promoting the erection of Edinburgh Infirmary. His principal works are *Osteology, a Treatise on the Anatomy of the Human Bones and Nerves;* and an *Essay on Comparative Anatomy* (1733-47).—His son (1738-1817), ('Secundus') succeeded to his chair in 1759.—ALEXANDER MONRO ('Tertius'), son of the latter, succeeded in 1808.

Monroe, a city, capital of Monroe County, Michigan, on the Raisin River, 2 miles from Lake Erie, and 35 miles S. of Detroit. It has extensive nurseries, manufactures of boxes, furniture, etc., glass works, flour mills, etc., and a large shipping trade in telegraph poles. Pop. 8500.

Monroe, a city, parish seat of Ouachita Parish, Louisiana, on the Ouachita River, 76 miles W. of Vicksburg. It has a large trade in cotton, and has large oil mills, cotton compresses, and several hardwood lumber mills. It is surrounded by rich alluvial agricultural lands. Pop. 14,975.

Monroe (mon-rō'), JAMES, fifth President of the United States of America, was born in 1758 in Westmoreland county, Virginia; died at New York in 1831. He was educated at William and Mary College, and from 1776 till 1778 served in the Revolutionary army. He then devoted himself to the study of law. In 1782 and in 1787 he was elected a member of the Virginia Assembly, and from 1783 till 1786 he represented Virginia in Congress. In 1788 as a member of the Convention of Virginia he strenuously opposed the ratification of the new Federal constitution. In 1790 he was elected to the Senate of the United States. In 1794-96 he was minister plenipotentiary to France. From 1799 till 1802 he was governor of Virginia, and in 1803 he returned as envoy-extraordinary to France on a mission which resulted in the acquisition of Louisiana for $15,000,000. He was afterwards employed on diplomatic

service in England and Spain. In 1811 he was governor of Virginia; in 1811-17 he was Secretary of State, being also Secretary of War in 1814-15. In 1816 the Democratic Republican party elected him to the presidency of the United States. The Federalist party went out of existence with this election, and in 1820 there was no opposition to Monroe, the candidate of the Democratic Republicans. Only one electoral vote was cast against him, this by a delegate who declared that no one but Washington should have the unanimous vote of the electoral college. Mexico and the emancipated countries of South America were formally recognized by the American government during Monroe's second term; but the leading event in it was the promulgation of the Monroe Doctrine. (See following article.)

Monroe Doctrine, THE, a principle in international politics, corresponding in America to the balance of power in Europe, was formulated in President Monroe's message of December 2, 1823, in the statement that the United States would consider any attempt to extend the European political system to any portion of America as dangerous to the peace and safety of the American nations. At the same time the American continents were declared to be no longer subjects for colonization by any European power. The doctrine has several times been reasserted, notably in the case of Napoleon III during his Mexican invasion, and more recently by presidents Cleveland and Roosevelt. Though the doctrine has all the force of a first principle in the United States, it has never been formally sanctioned by Congress. See full text under *United States*.

Monrovia (mon-rō'vi-a), a seaport of West Africa, the capital of the State of Liberia, founded in 1824, and named after President Monroe. Pop. 5000.

Mons (mons; Flemish, *Bergen*), a city of Belgium, capital of the province of Hainault, 35 miles southwest of Brussels, on the Trouille, here crossed by four bridges. It is situated in the Borinage coal district, with an annual output of 12,000,000 tons. There are manufactures of linen, woolen and cotton fabrics, firearms, cutlery, etc. The principal buildings are the beautiful Gothic church of St. Waltrude, the town hall and the Renaissance belfry. Mons occupies the site of one of Cæsar's forts, and has figured much in history. About three miles to the south is the ridge of Malplaquet, where, at a cost of 20,000 men, the Duke of Marlborough won the last and most terrible of his battles, in 1709.

The British Expeditionary Force defended Mons in the opening weeks of the European war (q. v.). On August 23, 1914, five German army corps, with reserves, numbering over 300,000 men, were launched against the small British force of 80,000 men under Sir John French. It was the intention of the Teutons to annihilate England's 'contemptible little army,' as they styled the British Regulars. But though the British were outnumbered four to one, they gallantly held the enemy and retired in good order, inflicting terrible casualties on the Teutons. It was the beginning of the slow, steady retirement of the allied Anglo-French army, which continued till the Marne was reached, and the historic stand was made. See *Marne, Battle of*.

Monsieur (mo-syeu; abbreviated *M.*; plural *Messieurs*, abbreviated *MM.*), used without any addition, formerly in France designated the king's eldest brother, though in addressing him, the title Monseigneur was used. In common use it answers to the English *sir* and *Mr.*

Monsoon (mon'sōn), the name given to a certain modification or disturbance of the regular course of the trade winds which takes place in the Arabian and Indian seas. Between the parallels of 10° and 30° south latitude the eastern trade wind blows regularly, but from the former parallel northwards the course is reversed for half the year, and from April to October the wind blows constantly from the southwest. During the other six months of the year the regular northeast trade wind prevails. These two alternating winds are the monsoons proper, but the name is now frequently given to similar alternating winds in any region.

Monster (mon'ster), or MONSTROSITY, a term applied in anatomy and physiology to living beings which exhibit from birth onwards some important abnormal features in structure, or present notable deviations from the normal type of their kind. The science which investigates such abnormal forms is known as *teratology*. Monsters present very wide variations in the characters and degrees of the malformations, ranging from an almost imperceptible to an almost total deviation from the normal type. But there are definite types of monstrosities, distinguished by distinct anatomical characters, just as there are definite types of normal structure; and the former may be classified by considering the fœtus or embryo. The anatomist may at once detect all fictitious cases of monstrosities by noting that they present characters

perfectly incompatible with any known type of abnormal development. Tales of monsters occurring in man and in beasts are met with in the writings of the older anatomists and naturalists; but such accounts, if not entirely destitute of truth, owe most of their interest to the liberal embellishment with which they have been recorded. Old writers have argued for the production of such ideal monsters by the intercourse of demons and women, of brutes and men; and witchcraft, magic, spell, divine vengeance—and, more lately, the effect upon the mother's mind of fright, terror, dreams, etc.—have each and all been credited, but equally erroneously, with causing malformations and abnormalities in the yet unborn child or embryo. Teratology can explain most, if not all malformations, as results of abnormal growth or disease. These so-called '*freaks* of nature' are in truth the results of morbid actions and operations in the living organism, as well defined, but not yet so well known, as are those of the healthy and normal body. Among the prominent or primary causes in the production of monstrosities in the human embryo are the following:—Deficiencies or deformations in the reproductive organs and conditions of the father or mother, or of both parents; diseases or malpositions of the placenta or afterbirth, or of the fœtal membranes; retardation in the development of the fœtus itself, arising from pressure, injuries, or actual disease either originating from the germ itself or communicated from the mother; and the presence of actual or potential disease in either or both parents. Injuries to the mother may also to some extent affect the embryo, though most authorities are doubtful on the point. Malformations and monstrosities are frequently met with in the lower animals, and particularly in those which are domesticated by man. In the plant world monstrosities also occur.

Monstrance.

Monstrance, or RE-MONSTRANCE (rĕ-mon'strans), called also *ostensorium* or *expositorium*, is the sacred vessel in which, in the Roman Catholic Church, the host is shown to the people at benedictions, processions, and other solemnities. Its use probably dates from the establishment of the festival of Corpus Christi in 1264 by Pope Urban IV. The earliest monstrances known date from the fourteenth century, and are made in the form of a Gothic tower. The most common form now consists of a chalice-footed stand of some precious metal, and a circular repository, usually a transparent pyx, surrounded by sun-like rays. In the Greek church the monstrance is shaped like a coffin.

Montagnards (mon-tăn-yăr), or LA MONTAGNE, 'the Mountain,' a popular name in French history, given to the extreme democratic party in the convention, because they occupied the higher rows of benches in the hall where it met. The chiefs of 'the Mountain' were Danton, Marat, and Robespierre, the men who introduced the 'Reign of Terror.' The Mountain rose to the height of its power in June, 1793, and for more than a year it was sufficiently formidable to stifle all opposition. Soon after the fall of Robespierre (July 28, 1794) the name of 'Montagnard' and 'Montagne' gradually disappeared from party nomenclature. A futile attempt was made by the extreme party in the National Assembly, after the revolution of 1848, to revive the title of 'Mountain.'

Montagu (mon'ta-gū), LADY MARY WORTLEY, famous for her brilliant letters, was born in 1689. She was the eldest daughter of Evelyn Pierrepont, afterwards duke of Kingston. In 1712 she made a runaway match with Mr. Edward Wortley Montagu, a wealthy Whig scholar, who had quarreled with her father. On the accession of George I in 1714 Mr. Montagu obtained an official position in London, and Lady Mary emerged from the rural seclusion in which she had hitherto spent her life. Her beauty and elegance and her wit and vivacity rapidly gained her admiration and influence, and she became familiarly acquainted with Addison, Congreve, Pope, and other distinguished writers. In 1716 Mr. Montagu was appointed ambassador to the Porte, and Lady Mary accompanied him to Constantinople, where they remained from January, 1717, to May, 1718. It was during this period that Lady Mary's famous *Turkish Letters* were written. On her return to England she resumed her ascendency in the gay world of wit and fashion. She had, however, the misfortune to quarrel with Pope, and a long and keen literary war ensued, which did honor to neither. In 1739 Lady Mary left England to spend the remainder of her days on the Continent, but returned and died in 1762. Her

letters are marked by great vivacity and graphic power, together with keen observation and independent judgment. Lady Mary has another claim to remembrance in her courageous adoption of the Turkish practice of inoculation for smallpox, and for her energy in promoting its introduction into England.

Montague (mon-tăg'), a town (township) of Franklin Co., Massachusetts, bounded on the west by the Connecticut River and 52 miles W. of Fitchburg. It has extensive manufactures. Pop. 6866.

Montaigne (mon-tān'; Fr. pron. mon-ten-y'), MICHEL EYQUEM DE, the famous French essayist, was born in 1533 at the castle of Montaigne, in Périgord. He learned Latin conversationally before he could speak French, and Greek was also an early acquisition. At the age of six he became a pupil at the Collége de Guienne at Bordeaux, and at thirteen he began to study law. Little is known of his youth and early manhood. He was a parliamentary counselor from 1554 till 1567; he seems to have seen some military service in 1556; he married the daughter of a fellow counselor; and at some period was appointed a gentleman of the chamber to the king. In 1571, however, he retired to his ancestral château, and devoted himself to peaceful study and meditation. In 1580 he published the first two books of his *Essais*, and immediately afterwards set out on a journey through Germany, Switzerland, and Italy to restore his health, which had been shattered by the attacks of a hereditary disease. In 1582 and 1584 he was chosen mayor of Bordeaux. In 1588 he republished his *Essais*, with the addition of a third book. After a last visit to Paris (in the course of which he was thrown into the Bastile for a short time by the Leaguers) Montaigne seems to have dwelt quietly in his château. He died of quinsy in 1592. Montaigne's *Essais* have at all times been one of the most popular books in the French language. They embrace an extraordinary variety of topics, which are touched upon in a lively and entertaining manner, with all the raciness of strong native good sense, careless of system or regularity. Sentences and anecdotes from the ancients are interspersed, with his own remarks and opinions, and with stories of himself in a pleasant strain of egotism, and with an occasional license, to which severer moralists can with some difficulty reconcile themselves. His *Voyages*, a diary of his journeys in 1580-82, the MS. of which was discovered 180 years after his death, were published in 1774. There are two English translations of the *Essais*, one by Charles Cotton, and an earlier one by John Florio.

Montalambert (mon-tā-lăn-bär), CHARLES FORBES RENÉ, COMTE DE (1810-70), a French publicist, politician, historian and theologian, born in London in 1810; died at Paris in 1870. His father was a French emigré, afterwards a peer in France under the Restoration; his mother was English. Till 1819 Montalambert's education was carried on in England; but it was concluded in Paris. At the age of twenty he enthusiastically supported Lamennais and Lacordaire in their movement to promote liberty within the church; but when *L'Avenir*, the organ of the movement, was condemned by an encyclical letter from the pope in August, 1832, he turned his attention elsewhere. In 1835 he took his seat in the chamber of peers, and his eloquence, sincerity, and ability soon made him one of the most influential orators in the chamber. After the revolution of 1848 he was elected a member of the National Assembly. He was at first inclined to support Napoleon III, but was soon alienated by the policy of that emperor. Failing to be elected in 1857, he spent the remainder of his life in writing and traveling. Montalambert was an ardent lover of liberty, and yet a firm believer in aristocracy and ultramontanism. He had a profound admiration for the social and political institutions of England. Of his very numerous writings the chief is his *Monks of the West* (English transl. 1861-68). Others are *Vie de Ste. Elisabeth de Hongrie* (1836) and *L'Avenir Politique d'Angleterre* (1885).

Montana (mon-tā'na), one of the Western United States, organized as a territory in 1864 out of portions of the territories of Idaho and Dakota, admitted as a State in 1889. It is bounded on the north by Canada, east by the Dakotas, south by Wyoming and Idaho, and west by Idaho, and its area is 146,572 sq. miles. The surface is generally mountainous, the great range of the Rocky Mountains extending across the State, while minor chains occur in different parts. The principal rivers are the Missouri, the Yellowstone, and Clark's Fork of the Columbia. While largely mountainous, the State has broad areas of farming and grazing land, it being estimated that its farming area is equal in extent to the State of Iowa, its mountain and grazing area to Indiana, and its forest and Indian reserves to Georgia. While the rainfall is very scanty, the mountain valleys in the west

are exceedingly fertile, and irrigation, both private and governmental, is steadily bringing a wider area under cultivation. The leading agricultural products are wheat and oats, and fruit has become a very promising industry. The products of the farms promise soon to exceed those of the mines in value. Grazing, lumbering, sheep farming and wool production are industries of vast importance. Cattle and horses are also largely kept. The mineral wealth is very great, and the original settlement of the State was due to the discovery of gold and silver in abundance. Copper, lead and sapphires are also found, and large deposits of bituminous and lignite coal have been discovered. The production of copper is very large; until recently it was the largest of any State in the Union, and it is now surpassed only by that of Arizona. Among the wild animals are the coyote, lynx, the black and grizzly bear, Rocky Mountain sheep and goat, moose, deer, and the antelope. The pine, fir, and spruce abound. The water power of the State is abundant and not interrupted by freezing or drought. A portion of the Yellowstone National Park is within this State, and also the great Falls of the Missouri. It is crossed by the Northern Pacific, Great Northern and Chicago, Milwaukee and Puget Sound railroads. The capital is Helena. Pop. (1910) 376,053.

Montanus (mon-tā'nus), the founder of a Christian sect, appeared about the middle of the second century in Phrygia, as a new Christian prophet, advocating an ascetic code of morals and behavior, fasting, celibacy, and willing submission to martyrdom. He sought to establish a community of all true believers at Pepuza in Phrygia, there to await the second Advent. The Montanists were forced to withdraw from the Catholic Church and form themselves into a separate sect in Phrygia about 180. In North Africa they flourished for some time, but by the fourth century they seem everywhere to have disappeared or been merged with other sects.

Montargis (mon-tär-zhē), a town of France, department of Loiret, on the Loing, 39 miles E. N. E. of Orleans. It has the remains of a fine castle, a favorite royal residence before Fontainebleau. Montargis has manufactures of paper, etc. Pop. 11,038.

Montauban (mon-tō-bän), chief town of the department of Tarn-et-Garonne, in France, is finely situated on the Tarn, 120 miles S. E. of Bordeaux. Active manufactures of silk, wool, etc., are carried on. Montauban was a stronghold of the Huguenots, and the Protestants still maintain an academy and a theological college. Pop. 16,813.

Montbéliard (mon-bā-ä-lyär; Ger. *Mömpelgard*), a walled town of France, in the department of Doubs, 40 miles northeast of Besançon. It is a busy industrial town, with manufactures of clocks and watches, hardware and textile fabrics. Pop. 8723.

Mont Blanc (mon-blan; that is 'White Mountain'), the loftiest mountain of Europe, belonging to the Pennine chain of the Alps, and rising 15,781 feet above the sea-level, is situated on the frontiers of France and Italy, and near that of Switzerland. The main portion of the mountain and the highest summit are in France (Haute Savoie). The huge mountain mass (30 miles long by 10 miles wide) is almost entirely granitic. It has numerous summits, some rounded, some sharp (aiguilles). On the S. E. its face is steep; on the N. W. lateral chains are sent off, among which about thirty glaciers are counted. The chief are the glaciers Des Bossons, Bois, Argentière and Mer de Glace. The summit was first reached in June, 1786, by the guide Jacques Balmat.

Montbrison (mon-brē-zon), a town of France, department Loire, on the Vizezy. Pop. 6564.

Montcalm (mon-käm), LOUIS JOSEPH SAINT VERAN, MARQUIS DE, a French general, born in 1712. Having entered the army he distinguished himself in several campaigns in Europe, and in 1756 was appointed to the chief command of the French troops in Canada, during the French and Indian war. Here he took Fort Ontario (Oswego) and Fort William Henry (on Lake George), and occupied Ticonderoga (1758); but at Quebec, in 1759, was completely defeated by General Wolfe on the Heights of Abraham, both commanders being mortally wounded.

Montclair (mont-klär'), a city of Essex County, New Jersey, 5 miles N. N. W. of Newark. It is situated at the base and on the slopes of Orange Mountain, and is a place of residence for many New York and Newark business men. Pop. 25,000.

Mont de Marsan (mon dé mär-zän), a town of France, capital of the department of Landes, at the junction of the Douze and Midon. Pop. 9069.

Mont-de-Piété (mon-dé-pē-ā-tā; in Italian *Monte di Pietà*), a name for banks of charity which lend money on pledges at a low rate of interest, and whose aim is purely philanthropic. These institutions were estab-

lished to prevent the scandal and abuse of usury, and exist in Italy, France, the Netherlands, Spain, etc. In Britain pawnbrokers take the place of monts-de-piété.

Mont Dore (mon̤ dōr), a village with mineral springs and baths in Central France, dep. Puy de Dôme, situated among the mountains known as Monts Dore, highest summit Puy de Sancy (6100 ft.). Pop. 1677.

Montebello (mon-tā-bel'lō), a village in North Italy, 25 miles E. N. E. from Alessandria, noted for two Austrian defeats. On June 9, 1800, the victors were the French under Lannes, afterwards Duke of Montebello; and on May 20, 1859, the allied troops of France and Sardinia under Gen. Forey.

Monte Carlo (mon'tē kär'lō). See *Monaco*.

Monte Casino (mon'tā kās-sē'-nō), a famous Italian Benedictine monastery near San Germano, on the route between Rome and Naples. It was founded in 529 by St. Benedict on the site of an ancient temple of Apollo, to which Dante alludes, and which commands a magnificent prospect. It became renowned for its privileges and wealth, and its library grew rich in MSS. As a monastery it was dissolved in 1866, but it continues to exist in the form of an educational establishment. The church is magnificent, and contains the remains of St. Benedict.

Monte Cristo (mon'tā krēs'tō), a small island 6 miles in circumference belonging to Italy, 25 miles S. of Elba, the seat of a penal colony. Dumas has given the name of this isle to the hero of one of his most popular romances.

Montecuculi (mon̤-tā-kō'ko-lē), or more correctly, MONTECU'COLI, RAIMONDO, Prince of the Empire, and Duke of Melfi, military commander, born near Modena, Italy, in 1608; died at Linz in 1680. He entered the Austrian service, and served during the Thirty Years' war with great distinction. After the Peace of Westphalia (1648) he visited Sweden and England in a diplomatic capacity; and in 1657 the emperor sent him to the aid of the King of Poland against Rakóczy and the Swedes, and next year he assisted the Danes against the latter. In 1664 he gained a great victory over the Turks, after having driven them out of Transylvania. In 1673 he was placed at the head of the imperial troops, and checked the progress of Louis XIV by the capture of Bonn, and by forming a junction with the Prince of Orange in spite of Turenne and Condé. Montecuculi's subsequent advance into Alsace was repulsed by the Prince of Condé. His last military exploit was the siege of Philipsburg.

Montefiore (mon̤-te-fē-ō'rā), SIR MOSES, a Jewish philanthropist and centenarian, was born in England in 1784; died in 1885. In 1837 he was chosen sheriff of London, the same year he was knighted, and in 1846 he was made a baronet. His benevolence to Jews throughout the world was unbounded; and he visited Palestine seven times, the last when in his 92d year.

Montego Bay (mon̤-tē'gō), a seaport, situated on a bay of the same name on the N. W. coast of Jamaica. The bay is an open roadstead, and is exposed to storms from the north. Pop. about 6000.

Montelimar (mon̤-tā-li-mär), a town of France, dep. of Drôme, at the junction of the Roubion and Jabron, formerly a stronghold of the Huguenots. Its old castle is now used as a prison. It has manufactures of silk, hats, leather, etc. Pop. 9162.

Montemayor (mon-tā-mā'yōr), JORGE DE, a Spanish poet, born about 1520; died in 1561. In his youth he was a soldier, but he afterwards entered the service of Philip II as a singer, and accompanied that prince abroad. After his return he lived in Leon, where he wrote his celebrated *Diana Enamorada* (1542), the earliest Spanish pastoral romance.

Montenegro (mon̤-tā-nā'grō; native *Tzrnagora*, Turkish *Karadagh*, all meaning Black Mountain), an independent kingdom of Europe, in the northwest of Turkey, bounded by Austria, Albania, the Adriatic and Servia. Area, about 5650 sq. miles. The surface is everywhere mountainous, being covered by an extension of the Dinaric Alps, rising to the height of 8350 ft. There are, however, a few beautiful and verdant plains and valleys, in which the soil is tolerably fertile. The principal river is the Moratcha. About half of the Lake of Scutari, besides several smaller lakes, lies within the Montenegrin boundary. The climate is healthy. Forests of beech, pine, chestnuts, and other valuable timber cover many of the mountain sides. Fruit trees of all kinds abound, especially in the sheltered valleys, where even almonds, vines, and pomegranates ripen. Agriculture is in a very rude and inefficient state, though every cultivable piece of land is planted with Indian corn, potatoes, tobacco, rye, wheat, cabbages, or some other useful plant. Sheep, cattle and goats are reared in great numbers.

Manufactures, with exception of a coarse woolen stuff, are unknown. The chief occupations of the Montenegrins are agriculture and fishing, trade being altogether left to foreigners. The exports are sheep and cattle, provisions, sumach, honey, hides, cheese, butter, and other agricultural produce. The chief towns (in reality little more than villages) are Cettinje (4500 inhabitants), the capital; Podgoritza (4000 inhabitants); Niksich, and the seaports Dulcigno and Antivari. The Montenegrins are pure Serbs and speak a Serbian dialect. They are generally of tall stature and well proportioned. The men go at all times fully armed, whatever be the occupation in which they are engaged, and all between 14 and 50 years of age (estimated at 29,000) are liable to military service. In religion they are of the Greek church.

The history of Montenegro is a record of deadly struggles with the Turks. Practical independence was established in 1700. From 1788 to 1878 the Montenegrins co-operated in all the Russo-Turkish wars, and in 1910 Montenegro was made a kingdom. In the first Balkan war (*q. v.*) it joined the other Balkan states opposing Turkey and captured Scutari, but later was compelled by the council of the Powers to surrender it to the new principality of Albania. As a result of the second Balkan war the mountain kingdom received from Servia half of the Sanjak of Novi Bazar and nearly doubled her population. On August 7, 1914, Montenegro declared war on Austria. (See *European War*) and in conjunction with a Servian army invaded Herzegovina, capturing the capital. At the end of 1915 the Austrians began a great offensive, drove the Montenegrins back and occupied the capital, Cettinje, January 13, 1916, and were in complete possession of the country by the end of the month. The population in 1910 was about 260,000, of whom 225,000 were of the Orthodox Greek Church, 13,000 Roman Catholics, and 15,000 Mohammedans. It is estimated that when the war began, in 1914, Montenegro had a population of 290,000.

Montereau (mon-tē-rō), a town of France, department of Seine-et-Marne, at the confluence of the Yonne and the Seine. Pop. 7870.

Monterey (mon-te-rā'), a city in Monterey county, California, on Monterey Bay, 90 miles S. E. of San Francisco. It is a favorite seaside resort. There are many examples of Spanish Mission architecture. Pop. (1910) 4923.

Monterey, (mon-te-rā'), capital of the State of New Leon, in Mexico, about 100 miles from the Texas frontier. Monterey, which is said to be the most Americanized town in Mexico, has a considerable transient trade, and nearby are lead, copper and silver mines. In 1846 it was captured by the United States troops under General Taylor. Pop. 62,226.

Monte Rosa. See *Rosa.*

Monte-Sant-Angelo (mon'tā sänt ä n' jä-lō), a town of S. Italy, 28 miles northeast of Foggia, has a picturesque castle and numerous churches. Pop. 17,369.

Monte Santo. See *Athos.*

Montespan (mon-tes-pän), FRANÇOISE ATHENAIS, MARCHIONESS DE, mistress of Louis XIV, born in 1641, was the second daughter of the Duke of Mortemart, and was, in 1663, married to the Marquis de Montespan. To the most fascinating beauty she added a natural liveliness and wit, and a highly cultivated mind. Soon after her appearance at court she attracted the king's attention, and from 1668 till 1674 she shared his favor with Mlle. de la Vallière. The latter, however, withdrew in 1674; M. de Montespan had already been ordered to retire to his estate. Mme. de Montespan bore eight children to the king, four of whom died in infancy. The others were intrusted to the care of Mme. Scarron, afterwards de Maintenon. The influence of the favorite mistress was often exercised in public affairs, and her empire over the king continued until about 1679, when a growing attachment to Mme. de Maintenon finally estranged his affections from Mme. de Montespan. She rarely appeared at court after 1685, and in 1691 she entirely quitted it. Her last years were devoted to religious exercises, acts of benevolence, and penitence.

Montesquieu (mon-tes-kyeu), CHARLES LOUIS DE SECONDAT, BARON DE LA BRÈDE ET DE, born in 1689 at the château of La Brède, near Bordeaux; died at Paris in 1755. He studied law; in 1714 became a counselor of the parliament of Bordeaux; and in 1716, on the death of his uncle, parliamentary president and Baron de Montesquieu. The *Lettres Persanes*, the first of the three great works on which his fame principally rests, appeared in 1721. Purporting to consist of the correspondence of two Persians traveling in France, this book is a lively satire upon the manners and customs, and the political and ecclesiastical institutions of the author's age and country. Other works of less importance followed; and in 1728

Montesquieu was admitted to the French Academy. He gave up his president's office in 1726, and then visited Germany, Hungary, Italy, Holland and England. In England he stayed for eighteen months, and imbibed a deep admiration for its social and political institutions. He returned to France in 1731, and in 1734 he published his *Considérations sur les Causes de la Grandeur et la Décadence des Romains*. In 1748 *L'Esprit des Lois* the result of twenty years of labor, was published, and at once placed its author among the greatest writers of his country. The scope of the work is perhaps best indicated by the subtitle of the original edition, which describes it as a treatise on the relation which ought to exist between the laws and the constitution, manners, climate, religion, commerce, etc., of each country. Among his lesser works are *Dialogue de Sylla et d'Eucrate; Le Voyage de Paphos; Essai sur le Goût* (unfinished); *Arsace et Isménie; Lettres Familières*, etc.

Montessori Method (mon'tes-sor'i), a system of education devised and carried into effect by Maria Montessori, an Italian physician and educator, who in 1907 opened the first 'House of Childhood' (*Casa dei Bambini*) in Rome and began to apply her revolutionary methods of education to the teaching of little children. In June, 1911, Switzerland passed a law establishing the Montessori system in all its schools. Model schools were soon opened in Paris, New York and Boston. Madame Montessori opened a training school in Rome. Madame Montessori endeavors to give the child an environment that will liberate his personality, and tries, through sense education, to stimulate the intellect itself. The children in her class room are not supplied with desks, but with comfortable chairs which they can move about at will. Frequently they squat on the floor or stand while playing with the apparatus by which they learn. There is practically no formal instruction, but the children learn to read and and write with surprising rapidity.

Montevideo (mon-tē-vid'ē-ō), capital of Uruguay, is situated on a small peninsula on the north coast of the estuary of the La Plata, 130 miles east-southeast of Buenos Ayres. Montevideo is one of the best built towns in South America, and enjoys one of the finest climates. The principal buildings comprise the cathedral, the town house, the Solis opera house, the custom-house, exchange, etc. There is a university with 60 professors and nearly 700 students. The commercial development of Montevideo, considerable as it is, has been much retarded by the shallowness of its harbor. Extensive dry docks have been recently constructed. Over 60 per cent. of the tonnage entering and clearing at Montevideo is British. The chief exports are wool, hides, tallow, dried beef, and extracts of flesh. The chief imports are British cottons, woolens, hardware, and other manufactured articles. Montevideo sends out above half the whole exports of Uruguay, and receives all but a small fraction of the imports. Pop. 312,946, one-third of whom are foreigners.

Montezuma (mon-te-zō'ma), Aztec emperor of Mexico when Cortes invaded the country in 1519. Influenced by an ancient prophecy, he at first welcomed the Spaniards; but when he discovered that they were no supernatural beings he secretly took measures for their destruction. Cortes on learning this seized Montezuma, and compelled him to recognize the supremacy of Spain. The Aztecs immediately rose in revolt, and refused to be quieted by the appearance of Montezuma. While urging them to submission he was struck on the temple with a stone and fell to the ground. Cut to the heart by his humiliation, he refused all nourishment, tore off his bandages, and soon after expired.

Montfort (mont'fort), Simon de, Earl of Leicester, famous in the constitutional history of England, was born in France between 1195 and 1200. He was the youngest son of Simon de Montfort, Earl of Leicester, the 'scourge of the Albigenses.' He won the favor of Henry III, and married Eleanor, countess dowager of Pembroke, and sister of the king. From 1248 till 1252 he acted as the king's 'locum tenens' in Gascony; but complaints of his despotic rule led to a trial before the lords, which resulted in his acquittal and a violent quarrel with Henry. He was conspicuous among those who extorted the Provisions of Oxford from the king in the 'Mad Parliament' in 1258; and he was the leader of the barons in the so-called 'Barons' war' that followed. The Mise of Lewes, to which Henry III agreed, contained the outlines of a new constitution, in which the principle of representative government was recognized; but this principle was carried a step farther in the famous parliament of De Montfort, which was summoned to meet at Westminster on January 20, 1265. The king accepted the constitution on February 14, 1265; but Prince Edward and the Mortimers raised the standard of revolt. At the battle of Evesham (August

4, 1265) De Montfort was defeated and slain. His memory was long revered by the people as a martyr for the popular liberty. See also *England* (*History*) and *Henry III.*

Montgolfier (mont-gol'fe-ér), JOSEPH MICHEL (1740-1810) and JACQUES ETIENNE (1745-1799), joint-inventors of the balloon, were born at Vida-lon-lès-Annonay, in the department of Ardèche, in France. Their first balloon, inflated with rarefied atmospheric air, ascended from Annonay in 1782, and the invention soon brought them fame and honors. Joseph was also the inventor of the water-ram. See *Aeronautics.*

Montgomery (mont-gum'e-ri), or MONTGOMERYSHIRE, an inland county in North Wales, has an area of 797 sq. miles, consisting mostly of wild, rugged, and sterile mountains, varying from 1000 to 2000 feet in height. It contains, however, some fine and fertile valleys, the most extensive and fruitful of which is that of the Severn, the principal river. The county is almost entirely occupied by the slate-rocks which overspread so large a portion of Wales. Lead and zinc are procured, and also some copper. The cultivation of the soil is carried on chiefly in the narrow valleys, and on the east side of the county, bordering on Salop. Wheat and oats are the principal crops; and orchards and gardens are numerous on the east side of the county. In the hilly districts cattle and great numbers of small and hardy ponies, commonly called *merlins*, are reared. Flannels are manufactured, as are also a kind of cottons called 'Welsh plains.' Montgomery is the county town, but the largest town is Welshpool. Pop. 53,147.—MONTGOMERY, the county town, a mere village, belongs to the Montgomery district of boroughs, which includes Llanfyllin, Llanidloes, Machynlleth, Montgomery, Newton and Welshpool. Pop. 983.

Montgomery, a city, capital of Alabama and of Montgomery county, on the left bank of the navigable Alabama River, 180 miles N. E. of Mobile. The principal buildings are the state capitol, in the rotunda of which the Confederate government was organized in 1861; the United States court-house, Union Railway station, Carnegie Library, and a state normal school for negroes. The city is an important jobbing and commercial center, and the manufactures, among which cottonseed oil and cake hold first place, equal in value those of Mobile, etc. Pop. 38,136.

Montgomery, ALEXANDER, a Scottish poet who flourished during the latter half of the sixteenth century, was born at Hazelhead Castle in Ayrshire. He seems to have experienced the fluctuating fortune of a courtier, at first in the service of the regent Morton, and afterwards in that of James VI, who granted him a pension. He died probably between 1605 and 1610. His principal poem, the allegory of the *Cherry and the Slave*, was first published in 1597. Many of his sonnets and miscellaneous pieces, some of which have considerable merit, were written much earlier and circulated in manuscript.

Montgomery, JAMES, the 'Christian Poet,' was born in 1771 at Irvine, Ayrshire, where his father was a Moravian preacher; died at Sheffield in 1854. He was educated at the Moravian school of Fulneck, near Leeds, and in 1792 became editor of the *Sheffield Iris*, a liberal dissenting paper, a post which he held till 1825. He was twice imprisoned (1795-96) for political offenses in his newspaper; and in 1797 he published his first volume of poems, under the name of *Prison Amusements*. In 1806 appeared his *Wanderer in Switzerland*, the first effort of his which gained the approbation of the public, though severely handled by the *Edinburgh Review*. It was followed in 1809 by the *West Indies*; in 1813 by *The World Before the Flood*; in 1819 by *Greenland*, a missionary poem; and in 1827 by *The Pelican Island*, perhaps his best work. He also wrote a number of hymns and other small pieces, which were published along with his longer poems.

Montgomery, RICHARD, soldier, was born in Swords, Ireland, in 1736. After serving with credit in the English army he was with Wolfe in 1759 at the taking of Quebec, and soon after resigned his commission and emigrated to America, where, in 1775, he was a delegate to the Continental Congress. Put in command of the northern department, he invaded Canada, captured Montreal, and was killed December 31, 1775, in a gallant attack on Quebec.

Montgomery, ROBERT (1807-55), a prolific versifier, is chiefly famous for having been mercilessly ridiculed by Lord Macaulay in the *Edinburgh Review*. He was born at Bath in 1807, and having taken orders in the Church of England, officiated at Percy Street chapel in London till his death in 1855, with an interval of four years as pastor of St. Jude's Episcopal chapel in Glasgow. His chief works, which amply justify Macaulay's strictures, though hardly their tone, are *The Omnipresence of the Deity* (1828); *Satan* (1830), whence his sobriquet of 'Satan Montgomery'; and *The Messiah*.

Month, a period of time derived from the motion of the moon; generally one of the 12 parts of the calendar year. The calendar months have from 28 to 31 days each, February having 28, April, June, September and November, 30, the rest 31. Month originally meant the time of one revolution of the moon, but as that may be determined in reference to several celestial objects there are several lunar periods known by distinctive names. Thus the *anomalistic month* is a revolution of the moon from perigee to perigee, average 27 days 13 hrs, 18 min. 37.4 sec.; the *sidereal month*, the interval between two successive conjunctions of the moon with the same fixed star, average 27 days 7 hrs. 43 min. 11.5 sec.; the *synodical*, or *proper lunar month*, the time that elapses between new moon and new moon, average 29 days 12 hrs. 44 min. 2.9 sec. The *solar month* is the twelfth part of one solar year, or 30 days 10 hrs. 29 min. 5 sec.

Monti (mon'tē), VINCENZO, an Italian poet, born in 1754; died in 1827. Educated at Faenza and Ferrara, in 1778 he went to Rome, where he wrote two tragedies—*Aristodemo* and *Galeotto Manfredi*—the splendid style of which was admired, although the plots were thought too tragic, and dramatic action was wanting. The murder of the French ambassador Basseville at Rome in 1793, gave occasion to his fiercely anti-republican poem *Bassvilliana*, in which he closely imitates Dante. Subsequently Napoleon appointed him secretary of the directory of the Cisalpine Republic in Milan, and finally historiographer of the kingdom of Italy. In this last-named capacity the poet published in Napoleon's honor his *Bardo della Selva Nera*, which, however, was received with disapprobation. Monti also published a third drama, *Caio Gracco*, and translated Homer's *Iliad*. He died in 1827 at Milan.

Monticello (mon-tē-sel'lō), the former residence of Thomas Jefferson, in Albemarle County, Virginia, on an elevation near Charlottesville. The great statesman is buried in a small private graveyard adjoining the road leading to the house.

Montilla (mon-tēl'yä), a town in Spain, province of Cordova; produces a fine variety of sherry, dry and rather bitter, variously known as Montilla and Amontillado. Pop. 13,608.

Montluçon (mon-lü-sōn), a town in France, department of Allier, on the Cher, 40 miles S. W. of Moulins, was a strong fortress during the middle ages. Portions of the walls and towers still remain. The castle, on a height above the river, dates from the fifteenth and sixteenth centuries. The manufactures are plate-glass, iron, cutlery, etc. Pop. 31,888.

Montmorency (mont-mō-ren'si), is a small river of Canada, which rises in Snow Lake, province of Quebec, flows south, and joins the St. Lawrence 8 miles below Quebec. Near its mouth are the Falls of Montmorency, which have a breadth of about 50 feet, and a perpendicular descent of 242 feet.

Montmorency (mon-mo-rän-si), the name of a noble family of France and the Netherlands, derived from the village of Montmorency, near Paris. One of its most distinguished members was ANNE DE MONTMORENCY, first duke of Montmorency, Constable of France, and a distinguished general, born in 1492. He distinguished himself at the battle of Marignano in 1515, and for his valor at Bicocca, in 1522, was made marshal. He was taken prisoner along with Francis I at the battle of Pavia, in 1525, but was soon after ransomed. In 1536 he defeated Charles V. Francis I conferred on him the dignity of Constable in 1538. In 1551 he was made a duke. In 1557 he lost the battle of St. Quentin against Philip II of Spain, and was taken prisoner, but he regained his freedom by the Peace of Cateau-Cambrésis in 1559. Under Charles IX he joined the Duke of Guise and Marshal St. André in forming the famous triumvirate against Condé and the Huguenots. At the battle of Dreux, in 1562, Montmorency was made prisoner by the Huguenots; on the renewal of the civil war he gained a decisive victory over them at St. Denis, November 10, 1567, though the following day he died of his wounds. His grandson, DUKE HENRY II, born in 1595, was in his eighteenth year created Admiral of France. He fought successfully against the Huguenots and Spaniards, and was made a marshal; but having joined Gaston, duke of Orleans, in rebellion against the influence of Richelieu, he was taken prisoner at the battle of Castelnaudary, and executed at Toulouse as a traitor in 1632.

Montoro (mon-tō'ro), a town of Spain in Andalusia, 27 miles northeast of Cordova, is situated on the Guadalquivir, which is here crossed by a handsome bridge of the sixteenth century. Pop. 14,581.

Montpellier (mon-pel-yā), chief town of the department of Hérault, in France, is situated in a picturesque region, on the Lez, about 6 miles north of the Mediterranean and 80 miles W. N. W. of Marseilles. It is one of the

handsomest towns of the south of France. Among its noteworthy features are the Peyrou, a splendid promenade, on which is the so-called Château d'Eau, at the termination of a noble aqueduct; the citadel; the cathedral; the Palais-de-Justice; and the Porte de Peyrou, a triumphal arch of the Doric order. Montpellier is well equipped with educational and other institutions, and since the twelfth century has been famous for its school of medicine, said to have been founded by Arab physicians driven out of Spain. There are also 'faculties' of law, science, and literature, and a public library of 100,000 vols. The botanical garden, begun under Henry IV, is the oldest in France. Montpellier manufactures cottons, candles, soap, verdigris, chemicals, etc. Pop. (1910) 80,230.

Montpelier (mont-pēl'yer), a city of Vermont, capital of the state, and county seat of Washington county, 35 miles S. E. of Burlington on the Winooski River. It has a magnificent capitol, with a dome 124 feet high. Pop. (1910) 7856.

Montreal (mont-rē-ąl'), the largest city and the commercial capital of the Dominion of Canada, is situated on an island of the same name, formed by the mouths of the Ottawa, where, after a course of 750 miles, it debouches into the St. Lawrence. It is built upon the left or northern bank of the St. Lawrence, and is situated 180 miles S. W. of Quebec and 985 miles by river from the Atlantic Ocean. Behind the town rises the Mount Royal (Mont Real), from which it derives its name, and which is reserved as a public park. Situated at the junction of the inland and the ocean navigation, it has a harbor with three miles of wharfage accessible to steamers of the deepest draught. The canals, which have their outlet at this point, afford, with the waters they connect, uninterrupted navigation from the Strait of Belle Isle to Port Arthur, at the head of Lake Superior, a distance of 2200 miles. There are numerous lines of steamships which have their Canadian headquarters at Montreal. It is also the chief terminus of the Grand Trunk Railway, and the eastern terminus of the Canadian Pacific Railway. The city, which is one of the most attractive in Canada, contains many handsome public buildings; and is divided into distinctly marked English and French quarters. The chief public buildings are the court-house, the barracks, Bonsecours Market, custom-house, city hall, etc.; and the principal churches are St. Peter's Cathedral, constructed on the model of St. Peter's at Rome; the church of the Notre Dame (large enough to accommodate 10,000 persons); St. Patrick's, Christ Church Cathedral, St. Andrew's, St. Paul's, etc. McGill University, Presbyterian College, Wesleyan Theological College, Congregational College, Anglican Diocesan College, Bishop's College and University, Montreal School of Medicine and Surgery, Royal Victoria College (for women), are the leading Protestant educational institutions; those of the Roman Catholics comprise Laval University, St. Mary's College, Montreal College, Hochelaga Convent, etc. There are also a Society of Natural History, a museum and library, Mechanics Institute, Canadian Institute, Fraser Institute, etc. There are several libraries besides those of the above institutions, a natural history society with museum, an art association, musical societies, etc. The exports are chiefly the products of the country, such as grain, flour, cheese, lumber, etc., and there is a large trade in furs. The principal imports are cottons, woolens and silks, iron and hardware, and tea and sugar. Among the industrial establishments of Montreal are iron foundries, distilleries, breweries, sugar refineries, soap and candle works; and there are manufactures of cotton, silk,

boots and shoes, paper, carpets, tobacco, hardware, edge-tools, floor-cloth, carriages, etc. The Grand Trunk Railway, which connects the railways of Canada with those of the United States, crosses the St. Lawrence at Montreal by the stupendous (tubular) Victoria Bridge, 9184 feet in length, constructed in 1854-59. Montreal was founded, under the name of Ville-marie, in 1642, on the site of the Algonquin village Hochelaga. It came into the hands of the English in 1760, when it was taken from the French by General Amherst. It was the seat of government of Lower Canada until 1849, in which year it was superseded by Quebec. The population in 1881 was 140,747, but since then several important municipalities have been annexed to the city, and the population had grown by 1917 to 640,000, or including outskirts 733,000, the majority of whom are of French origin.

Montreal, an island of Canada, in the river St. Lawrence, at the confluence of Ottawa River, 32 miles long, and 10½ broad, containing the city of Montreal. The surface is generally level (with the exception of Mount Royal), and the soil is for the most part fertile and well cultivated.

Montrose (mon-trōz'), a seaport town in Forfarshire, Scotland, is situated 60 miles N. E. of Edinburgh, at the mouth of the South Esk, which widens out into a shallow expanse behind the town, known as Montrose Basin. The river is crossed by a suspension bridge, and by a railway bridge. Between the town and the sea are extensive 'links.' Montrose is a well-built and fairly prosperous provincial town, with the usual public buildings and institutions, including two public libraries and one of the largest parish churches in Scotland. The principal employment is flax spinning, employing about 2000 hands. Shipbuilding is also carried on, and there are extensive saw-mills. The foreign trade, which is largely in timber, flax, etc., is chiefly with the Baltic and Canada. Montrose is also the center of a fishery district. Pop. 12,427.

Montrose, JAMES GRAHAM, MARQUIS OF (1612-1650), son of the fourth earl of Montrose, was born at Montrose in 1612, studied at St. Andrew's, and afterwards made a prolonged stay on the Continent. In 1637 Montrose joined the Covenanters in their resistance to Episcopacy, and was sent to crush the opposition to the popular cause which arose in and around Aberdeen. In 1639 he was one of the leaders who were appointed to confer with Charles I. after which he went over to the royalist side, was created a marquis, and made commander of the royal forces in Scotland. With an army partly composed of Irish and Highlanders he gained in rapid succession the battles of Tippermuir and Bridge of Dee (1644), Inverlochy, Auldearn, Alford and Kilsyth (1645). He afterwards went to Austria, where he was made a marshal of the empire. Returning to Scotland in 1650, with an ill-organised force, he was defeated, captured and executed without trial, May 21, 1650.

Montserrat (mont-sér-rat'), one of the British West Indies, belonging to the Leeward group, lies about 27 miles S. W. of Antigua, and has an area of 32 sq. miles, mostly mountainous and barren. The principal exports are sugar and lime-juice. Its only town is Plymouth. Montserrat was discovered by Columbus in 1493, and was colonized by the British in 1632. Pop. 12,215, of whom it is estimated, not more than 200 are whites.

Monza (mon'za), a town in North Italy, 10 miles N. E. of Milan, is situated on the Lambro. It is the ancient Modica. The town is of great antiquity. Pop. 32,000.

Moody (mōō'di), DWIGHT LYMAN, evangelist, born at Northfield, Mass., in 1837; died in 1899. He went to Chicago in 1856, engaging in business and carrying on an active missionary work in association with Ira D. Sankey, an effective singer. They held religious services in many cities of the United States and Britain and had remarkable success. During the Civil War he was in the service of the Christian Commission. He founded the Northfield Seminary and Mt. Hermon Boys' School. He published his sermons and other works.

Moody, JOHN, an American statistician, born in Jersey City, New Jersey, in 1868. He devoted much attention to railroad and financial statistics; founded in 1900 *Moody's Manual of Railroads and Corporation Securities* and in 1905 Moody's Magazine.

Moody, WILLIAM H., statesman, was born at Newbury, Mass., in 1853. He was district attorney for the eastern district of Massachusetts, 1890-95; member of Congress 1895-1902; Secretary of the Navy 1902-04; Attorney General 1904-06. He was appointed a justice of the Supreme Court in 1906; but resigned because of illness in 1910.

Moody, WILLIAM VAUGHN, American poet, born in Spencer, Ind., July 8, 1869; died October 17, 1910. He was graduated at Harvard, 1893, where he was assistant in English, 1894-95.

From 1895 to 1901 he was instructor, and from 1901 to 1907, assistant professor in English in the University of Chicago. He edited the 'Cambridge' edition of Milton; and with Robert Morss Lovett prepared a *History of English Literature* (1902) and *A First View of English Literature* (1905). His *Ode in Time of Hesitation* (1900) showed splendid mastery of style and lyrical movement and brought Moody almost immediate recognition as a poet. His books of verse are *Poems* (1901) and *The Fire-Bringer* (1904); his plays *The Masque of Judgment* (in verse, 1900), *The Great Divide*, produced in 1907, and *The Faith Healer*, produced in 1909.

Moon (mōn), one of the secondary planets and the satellite of the earth, revolves round the latter in an elliptic (almost circular) orbit, in one sidereal month (see *Month*), at a mean distance of 238,840 miles, its greatest and least distances being 252,970 and 221,600 miles. Its mean diameter is 2163 miles; its surface is about 1/13 (14,600,000 sq. miles) of that of the earth; the volume 1/49; the mass about 1/81; and the mean density a little more than ⅔. A mass weighing 1 lb. on the earth's surface would weigh about 1/6 lb. on the moon's surface. For every revolution in its orbit the moon rotates once on its axis, so that the same portion of the surface is constantly turned towards the earth; but in virtue of an apparent oscillatory motion, known as libration, about 4/7 of the surface is presented at one time or another to terrestrial observers. If the moon's orbit were in the plane of the ecliptic, solar and lunar eclipses would occur monthly. The orbit is, however, inclined 5° 8′ 40″ to the ecliptic, so that the meridian altitude has a range of 57°. The point of the orbit nearest the earth is called the *perigee*, the farthest, the *apogee*. An eclipse of the moon occurs when it passes into the earth's shadow; when it prevents the sun being seen there is an eclipse of the sun. (See *Eclipse*.) The changes in the appearance of the moon, described by the words waxing and waning, are known as *phases*. The four chief phases, occurring at intervals of 90° in the lunar orbit, are New Moon, when it is between the earth and sun (*i. e.*, in conjunction with the sun), and so turns an unilluminated side to the earth; First Quarter, when one-half of the illuminated disc (*i. e.*, one quarter of the entire lunar surface) is visible; Full Moon, when the whole illuminated disc is presented to the earth; and Last Quarter, when once more only half of the disc is visibly illuminated. Between new moon and full moon the moon is said to *wax*; on the rest of its course it *wanes*. When more than a semicircle is visible it is said to be *gibbous*, when new or full it is said to be in its *syzygies*. On the visible portion of the lunar surface there is either no atmosphere or an exceedingly rare one, and no traces of organic life have been observed. As each portion is alternately in sunlight and in shade for a fortnight at a time, and as no atmosphere has been detected, it is conjectured that the lunar extremes of heat and cold far exceed the greatest terrestrial extremes. The surface of the moon is mainly occupied by mountainous masses, most of which are named after eminent scientific men. They sometimes appear detached as precipitous peaks, more frequently they form vast continuous ranges, but the most prevalent form is that of crater-mountains, sometimes 8 to 10 miles in diameter, and giving evident traces of volcanic action. Certain crater-like formations, which have still greater diameters, are generally spoken of as 'walled plains.' Larger still are the 'gray plains,' which were at one time taken for seas, before the absence of water from the lunar surface was demonstrated. Some of the mountains have been estimated to be over 24,000 feet in height, from observation of their shadows. Very peculiar ridges of comparatively small elevation extend for great distances, connecting different ranges or craters. The so-called 'rilles' or 'clefts' are huge straight furrows of great length (18 to 90 miles), now generally believed to be caused by cracks in a shrinking surface. There are also valleys of various sizes, and 'faults' or closed cracks, sometimes of considerable length. In reading descriptions of the visible peculiarities of the moon, it should be remembered that the highest telescopic power yet applied to that planet is only equivalent to bringing it within about 40 miles of the naked eye. The attraction of the sun for the earth and the moon tends to diminish their mutual action. When the moon is at new or full (in syzygies) the mutual attraction of the earth and moon is lessened by the sun more than usual, whereas it causes a small increase in the mutual action when the moon is in quadrature (when the line from the earth to the moon is at right angles to the line from the earth to the sun); again, the sun exerts a direct tangential acceleration on the moon which is positive (or towards the sun) when the moon is nearer the sun than the earth, and negative when the moon is further away than the earth; these two produce what is called the *moon's variation*, which, on the whole, is such that in each lunation the moon's velocity is greatest when

she is in syzygies and least when nearly in quadrature. For the influence of the moon on tides see *Tides*.

Moon, Mountains of the, the name given, on the authority of Ptolemy, who thus designates the range in which he places the sources of the Nile, to a chain of mountains long supposed to extend across the whole African continent at its broadest part. In reality no such range exists, though there are numerous different mountain systems in that extensive region.

Moonshiner, a term applied in the Southern and Western States to the makers of 'moonshine' or illicit whisky. The term came from the secrecy of their operations, frequently conducted at night, so as to evade the revenue officers.

Moonstone. See *Adularia*.

Moore (mōr), John, Scottish novelist and physician, born at Stirling in 1730; died in 1802. His best known work is his novel of *Zeluco* (1789), which seems to have exerted a considerable influence over Byron.

Moore, George, an Irish author, born in Ballyglass County in 1853. He has written poems and critical works and is one of the founders of the Irish Theater, but is best known for his novels, strongly realistic, in the style of the French school. His novels include *A Midsummer's Night* (1884), *Esther Waters* (1894), *Evelyn Innes* (1898), *The Untilled Field* (1903), and *The Lake* (1905).

Moore, Sir John, a celebrated British general, the son of the preceding, was born at Glasgow in 1761; killed at Corunna in 1809. Having obtained an ensign's commission in the 51st Regiment, he served at Minorca, in the American war, as brigadier-general in the West Indies (1795), in Ireland during the rebellion of 1798, in Holland in 1799, and in Egypt in 1801, where he was severely wounded in the battle which cost Sir Ralph Abercrombie his life. Moore was now regarded as the greatest living British general, and in 1805 he was knighted. In 1808 he was appointed commander-in-chief of the British army in Portugal to operate against Napoleon. He advanced to Salamanca in spite of the gravest difficulties, but was finally compelled to retreat to Corunna, a distance of 200 miles, in face of a superior force. This he accomplished in a masterly manner; but the absence of the fleet to receive his army forced him to a battle against Marshal Soult, in which Moore fell, mortally wounded, in the hour of victory (January 16, 1809).

Moore, Thomas, the national poet of Ireland, was born in 1779 in Dublin, where his father was a grocer; died near Devizes in 1852. From Trinity College, Dublin, he passed in 1799 to the Middle Temple in London, nominally to study law; but he almost immediately formed a connection with the fashionable and literary society of which he was so long an ornament, and in 1800 he was permitted to dedicate his Translation of the *Odes of Anacreon* to the Prince of Wales. His next venture, the *Poetical Works of the late Thomas Little*, though partly written in a licentious vein, which he afterwards regretted, increased his reputation; and in 1803 Lord Moira obtained for him the office of registrar of the admiralty court at Bermuda. Moore went out, but almost immediately appointed a deputy, and returned to England via the United States and Canada, and in 1806 published his *Odes and Epistles*. The severe castigation of this work

Thomas Moore.

by Francis Jeffrey in the *Edinburgh Review* led to a hostile meeting between the critic and the author, but the duel was interrupted by the authorities before a shot was fired. An allusion in *English Bards and Scotch Reviewers*, by Lord Byron, to a malicious report that the pistols on this occasion had been loaded only with powder, also produced a challenge from Moore, but matters were afterwards peacefully arranged. Both Jeffrey and Byron were subsequently among the warmest friends of Moore. In 1807 Moore agreed to write words for a num-

ber of Irish national airs, arranged by Sir John Stevenson. In these *Irish Melodies*, which were not finished till 1834, he found the work for which his genius was peculiarly fitted, and it is on them that his poetic reputation will mainly rest. With *The Intercepted Letters*; or, the *Twopenny Post Bag*, by Thomas Brown the Younger (1812), Moore entered upon the field of political and social satire, in which his wit and playfulness found good account; other works of this kind are the *Fudge Family in Paris* (1818); *Rhymes on the Road* (1823); *Memoirs of Captain Rock* (1824), etc. His most ambitious work, the gorgeous Eastern romance of *Lalla Rookh*, was published in 1817, and brought its author £3000, but two years later he was compelled to retire to France in order to avoid arrest for a debt of £6000, afterwards reduced to about £1000, for which the dishonesty of his deputy at Bermuda had rendered him liable. He returned to England in 1822, with the poem, *The Loves of the Angels*, and ultimately succeeded in paying the debt by his literary exertions. *The Life of Sheridan* was produced in 1825, and *The Epicurean*, a prose romance, in 1827. Next came the *Life of Lord Byron*, for which he received nearly £5000, and the *Life of Lord Edward Fitzgerald*. His remaining works include *The Summer Fête*, a poem; *Travels of an Irish Gentleman in Search of a Religion*, a serious apology for Roman Catholicism, and (in 1834) a *History of Ireland* for *Lardner's Cyclopædia*, an uncongenial task-work, never finished. He wrote little after this. From 1835 he had enjoyed a pension of £300, and in 1850 his wife, whom he had married in 1811, received an additional annual grant of £100. Moore's *Journal and Correspondence* was published by his friend Lord John Russell in 1852-56.

Moor-fowl. See *Grouse*.

Moor-hen, or GALLINULE. See *Gallinule*.

Moorish Architecture (mōr'ish), is that form of Saracenic architecture which was developed by the Moslem conquerors of Spain in building their mosques and palaces. Its main characteristics are—the horseshoe arch, varied by the trefoil, cinquefoil, and other forms of arch; profuse decoration of interiors by elaborately designed arabesques in low relief, enriched by colors and gilding, as well as by geometrical designs worked in mosaics of glazed tiles; the slenderness of the columns in proportion to the supported weight; and the curious stalactitic pendentives by which the transition is effected from the rectangular ground plan to the arched or domed roof. An important specimen of this style is the mosque of Cordova, now the cathedral, which was begun by Caliph Abd-el-Rahman (786 A.D.), completed by his son, and subsequently much altered. It consisted originally of eleven aisles, and the eight aisles which were afterwards added (976-1001) made it one of the largest buildings in Europe, but the effect of its great extent, 420 feet by 375, is marred by its height, which is only about 30 feet to the roof. Another notable specimen of

Moorish Decoration—Court of the Alhambra.

Moorish architecture is the Giralda or cathedral tower of Seville. It is supposed to have been built by Abû Yusûf Yakûb (1171 A.D.) as a tower of victory, and was used by the Moslems as a minaret or mueddin-tower. The base is a square of about 50 feet, from which the tower rises straight for 185 feet, and is now crowned by a belfry added in the sixteenth century. The lower part of this tower is nearly plain, but from about one-third of its height upwards it is enriched by sunk panels filled with ornamentation in relief, which give lightness and grace to the structure without affecting its general massiveness. The most

characteristic Moorish palace in existence is the Alhambra in Granada, an immense structure of simple and rather forbidding exterior, but within gorgeous almost be-

Moorish Doorway, Cordova.

yond description. (See *Alhambra.*) In this palace are found to perfection the distinctive characteristics of Moorish architecture.

Moors (mōrz), a Mohammedan, Arabic-speaking race of mixed descent, forming part of the population of Barbary, and deriving their name from the Mauri, the ancient inhabitants of Mauretania, whose pure lineal descendants are, however, the Amazirgh, a branch of the Berbers. The modern Moors have sprung from a union of the ancient inhabitants of this region with their Arab conquerors, who appeared in the seventh century. As the Mohammedan conquerors of the Visigoths in Spain (711-713) came from North Africa, the name Moor was also applied to them by Spanish chroniclers, and in that connection is synonymous with *Arab* and *Saracen.* These Moors pushed northwards into France, until their repulse by Charles Martel at the great battle of Tours in 732, after which they practically restricted themselves to Spain south of the Ebro and the Sierra Guadarrama. Here, for centuries, art, science, literature and chivalry flourished among them, while the rest of Europe was still sunk in the gloom of the dark ages. Their internal dissensions and divisions, however, weakened them in face of the new Christian kingdoms of Aragon and Castile, and before the close of the thirteenth century their possessions were limited to the kingdom of Granada. This, too, was finally subdued by Ferdinand the Catholic in 1492; and while great numbers of the Moors emigrated to Africa, the remainder, under the name of *Moriscos,* assuming in great part a semblance of Christianity, submitted to the Spaniards. The cruel proselytising zeal of Philip II, however, excited a sanguinary insurrection among the Moors in 1568-70, which was followed by the banishing of many thousands. In 1610 Philip II expelled the remainder, the most ingenious and industrious of his subjects. Between 1492 and 1610 about 3,000,000 Moriscos are estimated to have left Spain. The expulsion of the Moors was one of the chief causes of the decadence of Spain; for both agriculture and industries fell into decay after their departure. The expelled Moors, settling in the north of Africa, finally developed into the piratical states of Barbary, whose depredations were a source of irritation to the civilized powers even till well into the last century.

Moorshedabad. See *Murshidabad.*

Mooruk (mō'ruk; *Casuarius Bennettii*), a variety of cassowary, inhabiting the island of New Britain, where it is made a great pet with the natives. It is very swift of foot.

Moorva. Same as *Bowstring Hemp.*

Moose. See *Elk.*

Moose Jaw, a town of Saskatchewan province of Canada, 398 miles w. of Winnipeg. Pop. 13,824.

Moquis, (mō'kez), the name of an Indian people, of semicivilized culture, living in Northern Arizona. Coronada's expedition of 1540 was to the seven towns of the Moquis. They were subdued by the Spaniards, but gained their independence by a revolt in 1680. They cultivate the soil and are kind hearted and hospitable. Their houses are built of stone, set in mortar, and on top of almost inaccessible hills or mesas.

Mora (mō'ra), a game known to the ancients, and still in vogue in the south of Europe. The two players simultaneously present each a hand, with some of the fingers extended, at the same moment endeavoring to guess the aggregate number of fingers so extended. An accurate guess counts one: five is game.

Moradabad (mō-rud-ä-bäd'), a town of India, in Rohilkhand, in the Northwest Provinces, 75 miles east of Meerut, on the Ramganga. It is noted for its metal work, and is a center of local trade. It was founded by the Ro-

hills Afghans, and has a Protestant church and American mission, and a c tonment. Pop. 75,128.

Moraine. See *Glaciers.*

Morales (mo-rä'lās), Luis de, a Spanish painter, surnamed *El Divino*, probably because he painted sacred subjects almost exclusively, was born at Badajoz in 1509; died there in 1586. Invited to the court of Philip II, he lived for a short time at Madrid, and Philip latterly granted him a pension. His *Mater Dolorosa*, at Madrid, is considered his masterpiece. He is praised for his skilful gradation of tints, and his power of giving expression to resigned sorrow.

Morality (mu-ral'i-ti), or Moral Play, a sort of allegorical play, embodying moral discourses in praise of virtue and condemnation of vice, the dialogue being carried on by personifications of virtues and abstract qualities. The Devil of the earlier Miracle Plays, which were never entirely superseded by the Moralities, became the Vice of the latter; sometimes he appears in person, with the Vice as his attendant. Moralities first appeared in England about the beginning of the reign of Henry VI, and lingered until the reign of Elizabeth (about 1600). For a time they maintained their interest by reference to current topics, but finally gave way to the regular drama.

Moral Philosophy. See *Ethics.*

Morat (mo-rä; German, *Murten*), a town (2263 inhabitants) in the Swiss canton of Freiburg, on the Lake of Morat, 16 miles west of Bern. Here, on the 22d of June, 1476, the Swiss Confederacy, aided by some allies from the Rhenish cities, routed with great slaughter Charles the Bold, duke of Burgundy.

Moratin (mo-ra-tēn'), Leandro Fernandez, a Spanish writer of comedies, born in 1760 at Madrid; died at Paris in 1828. Moratin was the author of odes, sonnets, epistles, and other poems, as well as of five successful comedies, composed on the regular French models. He also wrote the valuable *Origenes del Teatro Español.*

Morava (mō'rä-va), the chief river of Moravia, a tributary of the Danube, which it joins aft a course of about 200 miles.

Moravia (mō-rā'vi-a; German, *Mähren*), a province of Czecho-Slovakia, formerly in the Austrian Empire; area 8578 sq. miles. It is enclosed by the Carpathians and other mountains, and belongs almost entirely to the basin of the March or Morava (from which it takes its name), a tributary of the Danube. The minerals are of considera- importance, and include iron, coal, graphite and slate. Nearly 97 per cent. of the soil is productive, the chief crops being rye, oats, barley, potatoes, beet-root and flax. Fruit is very abundant, and large quantities of wine are annually produced. Sheep in great numbers, and cattle, are reared. The woolen industries of Bohemia are of world-wide fame, and linen and cotton, beet-root sugar, iron and steel goods, machinery, beer and spirits are also turned out in large quantities. The chief towns are Brünn, Olmütz, Znaim and Iglau. In 1029 Moravia was united to the kingdom of Bohemia, with which it passed to Austria in 1526. In 1849 it was made a separate crownland within the Austrian empire. In 1918, at the close of the European war, on the dissolution of the Austro-Hungarian monarchy, it united with Bohemia, forming the state of Czecho-Slovakia (q. v.). Pop. 2,650,000. About 70 per cent of the inhabitants are Czechs.

Moravian Brethren, also called United Brethren, Herrnhuter, and officially Unitas Fratrum (Unity of Brethren), a Protestant sect or church which originally sprang up in Bohemia after the death of John Huss. (See *Bohemian Brethren.*) After the sanguinary religious wars which prevailed in Bohemia until 1627 they were everywhere almost annihilated. Their doctrines were still, however, secretly cherished in Moravia, and in 1722 a colony emigrated thence, and were invited by the Luther. Count Zinzendorf to settle on his estate near Berthelsdorf, in Saxony, where they built the town of Herrnhut, still the headquarters of the church. The doctrines of the brethren had hitherto been more in harmony with the Calvinistic than with the Lutheran form of Protestantism, but under the influence of Count Zinzendorf, who himself became a bishop, they attached themselves to the Lutheran Church. From Herrnhut the Moravian Church extended to other points in Germany, and to England and the United States (1735). These three countries form self-supporting home provinces of the Unitas, to which in 1889 the West Indies, hitherto a mission field, was added as a fourth. Each has its synod and elders' conference, subject to the General Synod, which meets at Herrnhut once every 7-12 years. The Moravian Brethren have always distinguished themselves as missionaries, and maintain stations in North and Central America, South

Africa, Australia and Tibet. The Moravian Brethren are distinguished for the Puritanical simplicity of their life and manners, and for their earnest, if somewhat narrow and austere, piety. The practice of living in exclusive communities or villages still obtains in Germany. Within these communities the unmarried men sometimes live in common in a building assigned for that end, the unmarried women in another, widows in a third. Moravian schools deservedly enjoy a high reputation even among those who are not members of the community. The clergy are divided into bishops, priests, and deacons. The Moravian church is estimated to number about 115,000 adherents. In the United States there are about 18,000 members.

Mora-wood. Same as *Fustic.*

Moray. See *Elgin.*

Moray Firth (mur'a), the great gulf on the northeast coast of Scotland, containing at its widest extent the sea between Duncansby Head in Caithness-shire and Kinnaird Head in Aberdeenshire, a distance of 78 miles; but in a restricted sense that portion which lies between Tarbat Ness and Lossiemouth (21 miles), and which extends into the Cromarty and Beauly Firths.

Moray, or Murray, James Stuart, Earl of, half-brother of Mary Queen of Scots, natural son of James V of Scotland and Margaret Erskine, born about 1533. In 1558 he joined the Lords of the Congregation, and was soon recognised as the head of the reformers' party. On Mary's return from France Moray became her favored adviser, but her marriage with Darnley and subsequent events caused a breach between them which constantly widened. On the deposition of Mary he was appointed regent, defeated her forces at Langside on her escape from Lochleven (1568), and appeared as evidence against her at her trial in England. He consequently incurred the bitter hatred of the queen's party, but earned from the people the title of 'Good Regent.' In 1570 he was shot in the streets of Linlithgow by Hamilton of Bothwellhaugh, who was actuated by private grievances.

Morayshire. See *Elgin.*

Morbihan (mor-bi-ăn), a northwestern department of France, on the Bay of Biscay; area, 2624 square miles, of which less than half is arable. The northern part is hilly, but the rest is low and level, especially along the coast, which is lined by several fertile islands and is deeply indented. The plains on the coast are fertile, and the ordinary fruits are abundant; cider, butter and honey are among the chief products. The fisheries are important, and the general trade, favored by the harbors on the coast and by canals, is considerable. Iron is the chief mineral. The chief town is Vannes. Pop. 573,152.

Mordant (mor'dant), a substance frequently employed to fix the colors in dyeing. See *Dyeing.*

Mordaunt (mor'dânt), Charles, See *Peterborough, Earl of.*

Mordvins (mord'vinz), a race of people inhabiting European Russia, and belonging to the Bulgaric or Volgaic group of the Finnish family of peoples. They are found chiefly in the governments of Penza, Simbirsk, Saratov, Samara, Nishegorod and Tamboy. Their chief sources of livelihood are cattle-rearing, hunting, fishing and bee-keeping. Their numbers are estimated at 480,000.

More (mōr), Hannah, popular writer on moral and religious subjects, born at Clifton, Bristol, about 1745; died there in 1833. Her talents early made her acquainted with Johnson, Burke, Garrick, and other literary men, and her plays, *The Inflexible Captive*, *Percy* and the *Fatal Captive*, were fairly successful. After the production of the last, in 1779, she devoted herself to the composition of works having a moral and religious tendency, the diffusion of tracts, and philanthropic labors. Her success was astonishing, the profits of her works during her lifetime exceeding £30,000. Her *Strictures on the Modern System of Female Education*, *Cœlebs in Search of a Wife*, *Practical Piety* and *Moral Sketches*, are among her best-known books.

More, Henry, a divine and philosopher, born at Grantham, in Lincolnshire, in 1614; died at Cambridge in 1687. He studied at Eton, and was graduated at Christ College, Cambridge, in 1639. In the following year he published his *Psycho-Zoia*, or the *First Part of the Song of the Soul*, a blending of Christian, Cabbalist and Platonic doctrines. In 1675 he accepted a prebend in the cathedral of Gloucester, which it is supposed he took only to resign it to his friend Dr. Fowler. He also gave up his rectory of Ingoldsby, in Lincolnshire. In 1661 he became a fellow of the Royal Society. His writings are characterized by the belief that Plato had received through Pythagoras a knowledge of Hebrew theology and was also favored directly with supernatural communications. The most admired are his *Enchiridion*

Ethicum (1669) and *Divine Dialogues Concerning the Attributes and Providence of God.*

More, Sir Thomas, a chancellor of England, only son of Sir John More, a judge of the Court of King's bench; born in London in 1480, beheaded in 1535. A portion of his youth was spent in the family of Cardinal Morton, archbishop of Canterbury, and chancellor; and he was then sent to Oxford, and afterwards entered at Lincoln's Inn. He had already formed an intimate and lasting friendship with Erasmus. About 1502 he became a member of parliament, and immediately made for himself a place in history by upholding the privileges of the House of Commons to treat all questions of supply as their own exclusive business. On the accession of Henry VIII he was made under-sheriff of London. In 1514 he was envoy to the Low Countries, soon after was made a privy-councilor, and in 1521 was knighted. He appears to have ere this time considerably enriched himself by practice, and with his wife, a daughter of a gentleman of Essex named Colt, he kept up a noble hospitality. In 1523 he became speaker of the House of Commons, and in 1529 succeeded Wolsey in the chancellorship. When Henry began his attacks on the papal supremacy More at once took up the position which his conscience dictated as a supporter of the old system. Henry marked him out for vengeance as an opponent of his matrimonial views, and More endeavored to shield himself by retiring from office. He was requested to take the oath to maintain the lawfulness of the marriage with Anne Boleyn. His refusal to do so led to his committal to the Tower, trial for misprision of treason, and execution. His chief work is the *Utopia* (in Latin), a philosophical romance describing an ideal commonwealth, which evinces an enlightenment of sentiment far beyond that of his time.

More'a. See *Greece.*

Moreau (mō-rō), Jean Victor, a French general, born at Morlaix, in Bretagne, in 1763; died in 1813. Bred to the law, he early displayed a predilection for the military profession, and in 1789 he joined the army of the north at the head of a battalion of volunteers. He so distinguished himself that he was named commander-in-chief of the army of the Rhine and Moselle in 1796, destined to threaten Vienna simultaneously with the invasion of Italy by Bonaparte. His conduct of the operations, and especially of the retreat to the French frontier in the face of a superior army, showed exceptional strategic power. In 1799 he was in command of the army of Italy, and next year had the command of the armies of the Danube and the Rhine. The passage of these rivers, and a series of victories, ending with Hohenlinden, induced the Austrians to ask for peace. Being found guilty of participation in the conspiracy of Pichegru and Cadoudal against Napoleon (1804), he had to go into exile, and purchased an estate in Pennsylvania, where he resided some years. He was subsequently induced to aid in the direction of the allies' armies against his own country, but was mortally wounded in the battle before Dresden in 1813, and died a few days later.

Morecambe Bay (mōr'kam), a bay on the northwest coast of England, running into Lancashire and Westmoreland. It is very shallow, and proposals to reclaim the greater portion of it have been frequently made.

Moreen (mu-rēn'), a woolen or woolen and cotton fabric made in imitation of moiré (that is, having a watered appearance), and used for curtains, dresses, etc.

Morel (mor'el), a genus of edible mushrooms (*Morchella*), applied specifically to *Morchella esculenta.* This is plentiful in some parts of Britain, and common in Germany. It is much used to flavor gravies, and is sometimes employed instead of the common mushroom to make ketchup.

Morelia (mō-rā'lē-a), a town of Mexico, capital of the State of Michoacan, 6400 feet above sea level. It has cotton and tobacco factories. Pop. 40,000.

Morelos (mō-rā'lōs), an inland State of Mexico, south of Mexico, containing the volcano of Popocatepetl; area, 2773 square miles; pop. 161,697.

Moresnet (mōr-nā'), one of the smallest republics in the world, with an area of about one and a half square miles, lying between Belgium and Prussia, four miles southwest of Aix-la-Chapelle. It attained self-government in 1841. The people are partly Dutch, partly Belgian and partly German. Prior to the European war (1914-) the republic was under the joint suzerainty of Belgium and Germany. Moresnet remained neutral during the war, and its 3500 inhabitants enjoyed unparalleled prosperity.

Moreton Bay (mōr'tun), the port of Brisbane, the capital of Queensland, in the Commonwealth of Australia. It is about 40 miles long N. and S. by 17 miles wide, and receives the waters of the Brisbane and other rivers. The anchorage is good.

Moreton Bay Pine. See *Araucaria.*

Moreto y Cabana (mo-rā'tō ē kä-bän'yä), AGUSTIN, a Spanish dramatist, born at Madrid in 1618. He studied at Alcala (1634-39), entered the household of the Cardinal Archbishop at Toledo, took holy orders, ultimately withdrew from the world to an ascetic religious brotherhood, and died in 1669. He was a friend and largely an imitator of Lope de Vega and Calderon, but by his developments on the humorous side is sometimes regarded as the founder of true comedy in Spain. He left more than 200 works, one of which, *El Desden con el Desden* ('Scorn for Scorn'), is classed among the four leading products of the Spanish drama.

Morgan (môr'gan), DANIEL, Revolutionary soldier, born in New Jersey in 1736, and served with distinction in the war of the Revolution. He was prominent in Arnold's expedition against Quebec, was in command of the riflemen at the battle of Saratoga in 1777, and was in command at the battle of the Cowpens in 1781, where he signally defeated the British under Tarleton. Congress voted him a gold medal for his gallantry. He died in 1802.

Morgan, JOHN HUNT, Confederate soldier, born at Huntsville, Alabama, in 1825. He took command of a troop of cavalry in 1861, made several daring raids through Kentucky, and in 1863 crossed the Ohio with about 4000 men, and made a dashing ride through Indiana and Ohio, destroying bridges, railroads, etc. He was pursued and captured, but escaped from prison and continued his career till killed in a battle at Greenville, Tennessee, September 4, 1864.

Morgan, JOHN PIERPONT, financier, was born at Hartford, Connecticut, in 1837. He became connected in 1857 with the banking firm of Duncan, Sherman & Co., and in 1871 was made a partner of the firm of Drexel, Morgan & Co., which afterwards became J. Pierpont Morgan & Co. In this capacity he entered into wide financial operations as a railroad and industrial organizer, and in 1901 created the largest business concern in existence, the United States Steel Corporation, with a capital of $1,100,000,000 and working funds of $200,000,000. From that time he continued in broad and bold operations and became the leading figure in American finance. He died in Rome, March 31, 1913.

Morgan, LEWIS HENRY, archæologist, born at Aurora, New York, in 1818; died in 1881. He became a lawyer at Rochester, and was elected to the State Assembly in 1861 and to the Senate in 1868. He became one of the founders of the modern school of ethnological science, which bases its work on the study and comparison of primitive civilizations. His reputation rests on his able *League of the Iroquois* and his *Systems of Consanguinity and Affinity.* He also wrote *The American Beaver.*

Morgan, SYDNEY, LADY, authoress and brilliant society figure, born somewhere between 1770 and 1786, the actual date having been whimsically concealed by her. Her father was an actor on the Dublin stage, named MacOwen or Owenson. She early attracted attention by her musical and other accomplishments. In 1797 she published a volume of poems, followed by a collection of Irish songs, and two novels, entitled *St. Clair,* and the *Novice of St. Dominick.* In 1806 appeared her *Wild Irish Girl,* a novel which passed through seven editions in two years. In 1811 she married Sir Charles Morgan, an eminent physician. Among her other writings are the novels of *O'Donnell, Florence Macarthy,* and the *O'Briens and the O'Flaherty; the Life and Times of Salvator Rosa; Woman and Her Master;* and *Passages from My Autobiography.* She died in 1859.

Morgan City, a city of St. Mary's Parish, Louisiana, on the Atchafalaya Bayou, 80 miles from New Orleans. It has lumber, sugar, fish and oyster interests. Pop. 5477.

Morganatic Marriage (mor-ga-nat'ik), in some European countries, one in which it is stipulated that the wife (who is inferior in birth to the husband) and her children shall not enjoy the privileges of his rank nor inherit his possessions. The common law of Germany permits such marriages only to the high nobility.

Morgarten (môr-gär'tn), a place in Switzerland, Canton Zug, where a small body of Swiss in 1315 totally defeated a large force of the Austrians.

Morgantown, a city, capital of Monongalia Co., West Virginia. It lies on the Monongahela River, 60 miles S. of Pittsburgh, has large glass works and other industries, and is the seat of the West Virginia University. Pop. 9150.

Morghen (môr'gen), RAPHAEL SANZIO, an Italian engraver, born in 1758. He studied at Rome under Volpato, whom he assisted in engraving the famous pictures by Raphael in the Vatican. He settled in Florence in 1793 as professor of engraving in the Academy

of Arts, and died in 1833. His works number about 200 in all, many of them of large size. Among the chief are the engraving of Leonardo da Vinci's *Last Supper;* the *Transfiguration*, after Raphael; a *Magdalen*, after Murillo; a *Head of the Saviour*, after da Vinci; the *Car of Aurora*, after Guido; *The Hours*, after Poussin; the *Prize of Diana*, after Domenichino; the *Monument of Clement XIII*, after Canova; *Theseus Vanquishing the Minotaur;* portraits of Dante, Petrarca, Ariosto, Tasso, etc.

Morgue (morg), LA, in Paris, a place behind Notre Dame, where the bodies of unknown persons who have perished by accident, murder, or suicide are exposed, that they may be recognized by their friends. From this all such places in English-speaking countries are given the name of morgue.

Morier (mō'ri-ēr), JAMES, an English novelist, born in 1780. He accompanied Lord Elgin as private secretary on his embassy to Constantinople, made the campaign of Egypt in the suite of the grand vizier, was taken prisoner by the French, and after his release became from 1810 to 1816 British envoy at the court of Persia. He died at Brighton in 1849. In 1812 and in 1818 he published accounts of two *Journeys Through Persia to Constantinople*, but he was best known by his *Adventures of Hajji Baba of Ispahan* (1824); *Adventures of Hajji Baba in England* (1828); *Zohrab the Hostage* (1832); *Ayesha, the Maid of Kars* (1834).

Morinda (mor-in'da), a genus of Asiatic trees of the cinchona family, the bark or roots of which yield red and yellow dyes.

Moringaceæ (mor-in-gā'se-ē), a nat. order of plants, closely akin to Leguminosæ and containing only the genus *Moringa*. See *Ben*.

Morion of the time of Queen Elizabeth.

Morion (mō'ri-un), a helmet of iron, steel, or brass, in general conformation resembling a hat, often having a crest or comb over the top, being without beaver or visor, introduced into Britain either from France or Spain about the beginning of the sixteenth century.

Morisco. See *Moors*.

Morisonians. See *Evangelical Union*.

Morlaix (mor'lā), a seaport of France, department of Finistère, 34 miles northeast of Brest, on a small estuary formed by the junction of two streams, which united to form the Dossen; with a government tobacco factory, and a good trade. Pop. 13,875.

Morland (mor'land), GEORGE, painter, born in London in 1763; died in 1804. He married a sister of James Ward, the animal painter, and William Ward, the engraver, and lived a very dissipated life, many of his best pictures being painted within the rules of a debtor's prison. His work deals with rustic and homely life, and the best of it is now highly prized by connoisseurs. He had extraordinary popularity during his lifetime, and about 250 of his pictures are said to have been engraved. The *Interior of a Stable*, now in the National Gallery, is perhaps his masterpiece.

Morley (mor'li), HENRY, author, born in London in 1822; educated at King's College, of which he was an honorary fellow; practiced medicine in Shropshire and teaching in Liverpool; and went to London as a journalist in 1851. From 1857 to 1865 he was English lecturer at King's College; after the latter year he was professor of English language and literature at University College, London, and also at Queen's College. In 1882 he became principal of University Hall. His more important works are connected with the history of English literature, and include *First Sketch of English Literature*, *English Writers*, *English Literature in the Reign of Victoria*, etc. He edited various series of literary works, besides writing many biographies, two volumes of *Fairy Tales*, etc. He died in 1894.

Morley of Blackburn, JOHN, first viscount (1838-), an English author and statesman, born at Blackburn, Lancashire. He graduated from Oxford University, 1859, and was for some time editor of the *Literary Gazette*. In 1863 he became editor of the *Fortnightly Review* and editor of *Macmillan's* in 1883. He was elected Member of Parliament for Newcastle-on-Tyne, 1883-95; chief secretary for Ireland in 1886 and from 1892 to 1895, supporting Gladstone in his Home Rule scheme; secretary of state for India, 1905-10; lord president of the council, 1910-14. He espoused the cause of the Boers in 1898, and was opposed to Britain's declaration of war on Germany in 1914, in which year he resigned from the cabinet, retiring to private life during the war. Among his published works are: *Life of Edmund Burke* (in English Men of Letters series), *Voltaire*, *Rousseau*, *Struggle for National Education*, *Compromise*, *Cobden*, *Studies in Literature*, *Oliver Cromwell*, *Life of*

Gladstone, Notes on Politics, and Recollections.

Mormons (Mor'mons), or more properly speaking the Church of Jesus Christ of Latter Day Saints, was founded in 1830 by Joseph Smith, a native of the United States, and others then dwelling in New York State. The distinguishing characteristics of the sect are, the belief in continual divine revelation, and a complete Apostolic organization. The Latter Day Saints accept both the Bible and the Book of Mormon as containing divine revelation. The Book of Mormon is held to be a history of America from the first settlement of the continent, which according to it took place after the destruction of the Tower of Babel, and up to and including the fourth century of our era, at which time lived the prophet Mormon, the reputed author of this work. Joseph Smith, then dwelling at Manchester, New York, affirmed in 1823 that an angel had appeared to him and revealed the hiding place of this ancient document, written on plates of gold and concealed in a hill in that vicinity. A document produced by Smith in 1829 was claimed by him to be a translation of this mysterious work, which was published in 1830, and was succeeded by a "Book of Doctrine and Covenants," a collection of special revelations claimed to be made to Smith and his associates, and dealing with all points connected with methods of worship and faith. The statement has been made that the Book of Mormon is an adaptation of a sort of historical romance written by one Solomon Spaulding in 1812. This, however, the Mormons emphatically deny, and declare that the discovery of the original Mss. of Spaulding's work, by Professor Fairchild, of Oberlin College, in 1884, corroborates their denial.

The Church of Jesus Christ of Latter Day Saints, the Mormon organization, was legally founded in Fayette, New York, on April 6, 1830. Its early career was one of persecution, the result being its removal to Kirtland, Ohio, in 1831; to Missouri in 1831-1838; to Nauvoo, Illinois, the City of Beauty, in 1839. It had grown largely during these migrations. In 1844 Joseph Smith and others were arrested on a charge of treason, which was never proven. On June 27, 1844, a mob broke into the jail where they were confined and shot him and his brother Hyrum. The Church was then scattered, and several aspirants for leadership arose, including Brigham Young, who had joined the Church in 1832. The adoption of polygamy as one of the tenets of the Mormon Church was the main cause of the persecution of its members, this becoming so active that in 1847 Brigham Young decided to migrate with his followers to Utah as a haven of rest in the wilderness. Here Salt Lake City was founded in 1849, and in the following years an active missionary work added largely to the Church membership. As early as 1862 Congress passed the Morrill Act to punish and prevent the practice of polygamy in the territories. This law was not inforced, but later acts of 1887 were, 1200 persons being convicted of polygamy and 12,000 disfranchised, the Church being dissolved. Finally, in 1890, the Mormon leaders repudiated the illegal system. On January 4, 1893, in response to a petition from the officials of the Church, pledging the membership to faithful obedience to the laws against polygamy, President Harrison issued a general pardon to all persons liable to the penalties of the Edmunds-Tucker Act of 1887, on condition that they had not violated its provisions since November 1, 1890. In 1896 Utah was admitted to the Union as a State, a clause prohibiting plural marriages being included in its constitution. Since then their settlements have spread through several of the Rocky Mountain States and into Canada and Mexico, their membership, in the census of 1910, being 310,000.

The migration to Utah did not comprise the whole body of Mormons, a considerable number remaining in the East. These repudiated polygamy, and by 1860 had developed a new organization under Joseph Smith, son of the founder. He was succeeded by his son, Frederick M. Smith, in 1914. The claims of Brigham Young to leadership were repudiated by this body, which claimed to maintain the original organisation and faith. It has local societies in most of the States and in many foreign countries, and operates a large publishing plant in its interests at Lamoni, Iowa, the headquarters of this branch of the Mormon Church. Its membership in 1910 was 65,000.

Morocco (mō-rok'kō; Arabic name, *Moghreb-el-akse*, the Extreme West), an empire or sultanate occupying the northwest extremity of Africa, bounded by the Atlantic Ocean, the Mediterranean, Algeria, and the desert; area, about 300,000 square miles. Pop. estimated at about 6,500,000. Its most remarkable natural feature is the Great Atlas, one of a series of five ranges extending from northeast to southwest. The mean elevation of the Great Atlas is 11,000 feet. Between the mountains and the sea are tablelands and

plains, some of them of great fertility. The rivers are unimportant, being mostly dry for part of the year, and generally diminishing in volume as they approach the sea. The coast offers few good harbors; the most frequented are Tangier, El-Araish (Laraiche), Rabat and Mogador. The climate in many parts is pleasant and temperate, in many others the summer heat is insufferable. The minerals include gold, silver, copper, iron and lead in larger or smaller quantities. The flora includes the esculent oak and cork oak; in the higher regions of the Atlas the cedar and Aleppo pine; the date palm and the dwarf palm east and south of the Atlas. Agriculture is in the lowest possible condition, and the annual production is calculated barely to supply the wants of the country. The cereal crops include wheat, barley and maize; but dhurra or millet constitutes the chief support of the population. The vine is cultivated only near towns for the sake of the fresh grapes and for the raisins. All the fruits of the south of Europe are cultivated to some extent. Among the wild animals are the lion, panther, jackal, hyena, wild boar, gazelle, and several species of large antelope. The locust is a cause of much devastation. The ostrich is found on the southern frontiers. Cattle and sheep are reared, and the spirited small horses for which the country was once famous are still numerous. There are large numbers of goats, which furnish a principal article of export—the well-known Morocco leather. In general, among the rural population, each family supplies all its own wants. In the towns, however, some manufacturers have sprung up, besides the well-known leather. Fez makes and exports the cloth caps which bear its name. Carpets, embroidered stuffs, pottery, arms, are also made. The trade is carried on by caravan with the interior, or by sea with European states, especially with Great Britain, next to which comes France. The Berbers are the oldest inhabitants of the country, and they devote themselves to agriculture rather than to pastoral pursuits. The Arabs form the bulk of the rural population in the plains; some of them are cultivators, and others are Bedouins. In the towns along the coast are found the Moors, and a considerable number of Jews inhabit all the commercial towns. To these must be added the negroes and their posterity of every shade. The civilization of Morocco has sunk to a low condition. The education at the schools and at the University of Fez does not go beyond the theology of the Koran. The public libraries, once famous, are now dispersed. Morality is represented as being in a deplorable state. The sovereign or sultan, styled by Europeans emperor, is absolute in the strictest sense. The imperial revenues are derived from arbitrary imposts on property, duties on imports and exports, monopolies, and fines or confiscations. The chief towns are Morocco and Fez, the one in the southwest, the other towards the northeast.—Morocco in ancient times formed part of Mauritania, and about 43 A.D. was incorporated in the Roman Empire. In the latter part of the seventh century the Arabs spread over North Africa, and took possession of Mauritania. Among ruling dynasties since then have been the Almoravides, Almohades, and others. The present dynasty, the ninth, was founded in 1648. In 1814 the slavery of Christians was abolished, and piracy was prohibited in 1817. The conquest of Algeria brought about complications with France, which led eventually to a dispute between France and Germany, and an international conference at Algeciras, Spain, in 1906. France was given police control of certain ports, the commercial rights of other nations to be observed, and France established a partial military occupation, with the tacit consent of the powers. In 1908-09 war existed between the Spanish forces at Melilla and the neighboring Riff tribes. After some reverses the Spanish were victorious and their position at Melilla was assured. A rebellion against Sultan Abdul led to his defeat in 1908, his brother Muley Hafid succeeding to the throne. In 1911 a controversy arose between France and Germany concerning their respective rights in Morocco, which ended in France transferring to Germany a considerable district in French Congo, in return for which France was left open to establish a protectorate in Morocco. American recognition of the French protectorate was announced by Secretary Lansing in a note dated January 17, 1917.

Morocco, formerly one of the capitals of Morocco, lies in the southwest of the country, on an extensive and fertile plain, 1500 feet above sea level. It is nearly 6 miles in circuit, and is walled, though its walls and towers are in a ruinous condition. The streets are unpaved, dirty, narrow, and irregular. There are several open areas used as market places, a covered bazaar, and many mosques. Near the palace, which is on the south of the city, is the Jews' quarter (el Millah), a walled inclosure of about 1½ miles in circuit, one-half of it nearly in ruins, very crowded, and excessively filthy. There are several tan-

ning and leather dyeing establishments. Pop. estimated at 40,000 to 50,000.

Morocco, a fine kind of leather made from the skins of goats, imported from the Levant, Barbary, Spain, Belgium, etc., tanned with sumach, dyed, and grained, the last process being that which gives it its well-known wrinkled appearance. It is extensively used in the binding of books, upholstering furniture, making ladies' shoes, etc. Imitation moroccos are made from sheep-skins, so perfect in appearance that it is difficult to distinguish them, but they are entirely lacking in the durability of the real article. The art of preparing morocco is said to have been derived from the Moors.

Moron (mo-ron'), a town of Spain, in Andalusia, 32 miles northeast of Seville. It has a fine church, and the ruins of a castle, long one of the most important strongholds of Spain, blown up by the French in 1812. Pop. 14,459.

Moroxite (mu-rok'sit), the crystallized form of apatite, occurring in crystals of a brownish or greenish-blue color.

Morpeth (mōr'peth), a borough in England in Northumberland, on the Wandsbeck, 14 miles north by west of Newcastle. It has a fine old parish church in the decorated English style. Its manufactures are considerable, but there are large collieries in the vicinity. Pop. 7436.

Morpheus (mōr'fūs), in Greek mythology, the son of sleep and god of dreams.

Morphia (mōr'fi-a), Morphine (mōr'fēn), the narcotic principle of opium, a vegetable alkaloid of a bitter taste, first separated from opium in 1816. It forms when crystallized from alcohol brilliant colorless prisms of adamantine luster. As it is very slightly soluble in water it is never used alone medicinally, but it readily combines with acids, forming salts extensively used in medicine. In small doses it is powerfully anodyne; in large it causes death, with narcotic symptoms.

Morris (mor'ris), Charles, author, born at Chester, Pennsylvania, in 1833. After a period spent in teaching and clerkship he became an active author and compiler, producing numerous works. Among these are *A Manual of Classical Literature; The Aryan Race: Civilization, an Historical Review of its Elements; Man and His Ancestor; Historical Tales*, etc. He compiled *Half Hours with the Best American Authors* and other works, did editorial work on several cyclopedias, and edited *Winston's Cumulative Encyclopedia.*

Morris, Clara, actress, born at Cleveland, Ohio, in 1849. She became in 1861 a member of the ballet in the Academy of Music, Cleveland, and later was trained for the dramatic stage. Her greatest success was in the representation of strong emotional roles.

Morris, Sir Edward, Canadian statesman, born in St. John's, Newfoundland, of Irish parents, 1859. He entered Parliament for St. John's (1885), and joined the Whiteway Cabinet (1889). He was acting attorney-general for Newfoundland (1890–95), and in 1897 went to London as delegate to the Colonial Office He was the leader of the Independent Liberal Party (1898–1900); became a member of the Bond Cabinet (1901); and in 1908 was elected leader of the People's Party. From 1902 to 1907 he was attorney-general and minister of justice of Newfoundland, and since 1909 has been Premier of Newfoundland. He was a member of the Arbitration Board, 1910, and was sworn by King George V. as a member of his Privy Council, 1911.

Morris, Gouverneur, statesman, was born in Westchester County, New York, in 1752, and adopted the legal profession. In 1777 he was elected to the Continental Congress, and was also a member of the New York Constitutional Convention, in which, against John Jay, he championed and won the cause of religious liberty. He removed to Philadelphia in 1780, and in 1787 was a member of the Philadelphia Convention that framed the Constitution of the United States, the final draft being his work. In 1792 he was sent as Minister to France and in 1800 was elected United States Senator from New York. He spent his later years in retirement, and died in 1816.

Morris, Harrison Smith, born at Philadelphia, Pa., 1856. He was director of the Pennsylvania Academy of Fine Arts, 1892–1905, editor of Lippincott's Magazine, 1899–1905, and art editor of the *Ladies' Home Journal*, 1905–08. In 1911 he was United States commissioner-general to the Roman Art Exposition, New York.

Morris, John Gottlieb, American clergyman, born in York, Pa., 1803; died in 1895. He was graduated at Dickinson College, and in theology at Princeton (1826). He was pastor of Lutheran churches in Baltimore and Lutherville, Md., and did much for the advancement of the church in America.

Morris, Robert, signer of the Declaration of Independence, was born in England in 1734. In 1775 he

was delegate to the Continental Congress. He became notable as the chief financial support of the army during the later years of the Revolution, aiding it to the full extent of his credit. He organized the Bank of North America, at Philadelphia, in 1781, the first bank of the United States, submitted a plan for a mint, which Congress approved, and was for several years superintendent of finance; in 1787 he was a member of the Convention that framed the United States Constitution; afterwards member of the first United States Senate. He was offered the post of Secretary of the Treasury, which he declined. He became bankrupt through unfortunate investments in his old age, and was imprisoned for debt. He died in 1806.

Morris, WILLIAM, an English poet, art writer and socialist, was born in 1834; died in 1896. He engaged in the designing and manufacture of high-class furniture and decorations for house interiors and had a material effect in improving the style of design employed for decorative textiles, wall-papers, etc. Morris published an epic poem, *The Life and Death of Jason*, in 1867, *The Earthly Paradise*, in 1868-71, *Love is Enough*, in 1883, *Sigurd the Volsung*, in 1876, etc. He translated various Icelandic sagas, Virgil's *Æneid* and Homer's *Odyssey*.

Morris Banks, banks organized according to the plan of Arthur J. Morris, of Norfolk, Virginia, after careful study of similar banks in Europe. Loans are made on the security of promissory notes signed by the borrower and indorsed by two friends who know his character and earning capacity.

Morris-dance (that is, *Moorish-dance*), a rustic dance supposed to have been derived from the Moors in Spain, formerly danced at village festivals, May-games, etc., in England. Bells were fastened to the feet of the performers, which jingled in time with the music, while the dancers clashed their staves or swords. In the reigns of Henry VII and VIII it was a principal feature in the popular festivals.

Morrison (mor'is-un), ROBERT, an English missionary and orientalist, born in 1782; died in 1834. In 1807 he went out as a missionary for Canton. In 1814, having completed the issue of the New Testament in Chinese, he commenced, with the assistance of Dr. Milne, who had joined him in 1813, the translation of the Old Testament. He was also the author of a Chinese grammar and dictionary.

Morristown (mor'is-town), capital of Morris County, New Jersey, 31 miles W. by N. from New York, is a favorite summer residence for citizens of New York. During the Revolutionary war it was twice the headquarters of the American army. The house occupied by General Washington has been purchased by the State Historical Society, and contains a collection of interesting relics. Pop. 12,507.

Morse (môrs) SAMUEL FINLEY BREESE, inventor of the electro-magnetic telegraph in its first practicable form, was born at Charlestown, Massachusetts, in 1791; died at New York in 1872. He was educated at Yale College, where he devoted special attention to chemistry and natural philosophy; but in 1811 went to England to study painting under West. In 1813 he was awarded the gold medal of the Royal Academy for his model of the *Dying Hercules*. Returning to the United States in 1815, he continued painting, and in 1826 succeeded in establishing

Samuel F. B. Morse.

in New York the 'National Academy of Design,' of which he was first president. In 1829 he went to Europe for three years, and during the return voyage worked out roughly a plan for employing electro-magnetism in telegraphy. It was not until 1835, however, that he was able to exhibit an instrument that was found to work well. By July, 1837, this instrument was perfected, and ultimately in 1843 Congress granted him means to construct an experimental line between Washington and Baltimore. This proved successful and as a result the Morse system of telegraphy has come into general use in America and Europe. In 1857 the representatives of ten countries met at Paris, and voted him 400,000 francs.

Morse's Telegraph. See *Telegraph*.

Morshansk (mar-shânsk'), a town of Central Russia, govern-

ment of Tambov, a great center of trade. Pop. 27,756.

Mortality (mor-tal'i-ti), Law of, the statement of the average proportion of the number of persons who die in any assigned period of life or interval of age, out of a given number who enter upon the same interval, and consequently the proportion of those who survive. Tables showing how many out of a certain number of infants, or persons of a given age, will die successively in each year till the whole become extinct, are generally called the tables of mortality. In England the bills of mortality, or abstracts from parish registers, were long the only means of arriving at these results; but being found very imperfect and unsatisfactory, they were supplanted in 1836 by a general registration. The registers, if kept with accuracy and minuteness, enable us to determine the proportion of deaths, not only at different ages and in different regions, but at different seasons, in persons of different occupations and habits, in towns, or the country; and thus afford valuable materials for the science of political economy. The average rate of mortality is affected by regular or constant causes, such as race, climate, age, sex, profession, social position, density of population, political institutions, habits, etc., and by such irregular or occasional causes as war, famine, pestilence, etc., but notwithstanding the interruption of these occasional causes a constant tendency to a mean has been found to exist in any given state of society. The tendency of a population to increase depends rather on the facility of procuring the means of subsistence than on the rate of mortality.

Mortar (mor'tär), a mixture of sand with slaked lime and water, used as a cement for uniting stones and bricks in walls. The proportions vary from 1½ part of sand and 1 part of lime to 4 or 5 parts sand and 1 of lime. When exposed to the action of the air this mixture absorbs carbon dioxide and 'sets,' forming a hard, compact mass. *Hydraulic mortars*, which harden under water, and are used for piers, submerged walls, etc., are formed from so-called *hydraulic lime*, containing considerable portions of silicia and alumina. See also *Cement*.

Mortar is a kind of short cannon, of a large bore, with a chamber, used especially for throwing shells. The fire from mortars is what is termed vertical fire, the mortar being directed at a high angle and the shell striking the ground nearly vertically. The principal recommendations of vertical fire are, that the shells search behind cover and produce a great moral effect. During the European war mortars of calibers from 3-in. to 16-in. were used in the field. See *Artillery, Cannon, Howitzer*.

Mortgage (mor'gaj), in law, the conveyance of an estate, real or personal, by a debtor to his creditor, as a pledge or security for a debt. The debtor is called the mortgagor, the creditor mortgagee. The conveyance is absolute in form, but subject to a proviso by which it is to become void, or by which the pledge is to be reconveyed upon repayment to the grantee of the principal sum secured with interest, on a certain fixed day. Upon the non-performance of this condition the mortgagee's estate becomes absolute at law, but remains redeemable in equity during a limited period. In general, every description of property and every kind of interest in which it is capable of absolute sale, may be the subject of a legal mortgage. A mortgagee is not allowed to obtain any advantage out of the security beyond his principal and interest. Though the mortgagee, after the mortgagor's default in payment of the principal sum and interest has the absolute legal estate, he is still considered in equity to hold only as security for his debt. In order to obtain absolute possession of the estate, the mortgagee has to file a bill of foreclosure against the mortgagor, calling upon the latter to redeem his estate, forthwith, by payment of the principal money, interest and costs; and if he fail to do so within the time specified by the court he is forever barred and foreclosed of his equity of redemption, and the mortgagee becomes owner in equity, as he before was in law. In the event of a sale any surplus must be paid to the mortgagor.

Mortification (mor-ti-fi-kā'shun), in medicine is the death of a part of the body, while the rest continues to live, and often in a sound state. Mortification is a popular term, the scientific term being *gangrene* or *necrosis*, the former usually applied to the death of soft parts, the latter to the death of bone. Mortification is generally induced by inflammation, by exposure to freezing cold, by hospital fevers, by languid, or impeded, or stopped circulation, as in cases of bedridden or palsied persons, and by improper food, particularly the spurred rye.

Mortmain (mort'mān; Fr. *mort*, dead, *main*, hand), in law, possession of lands or tenements in dead hands, or hands that cannot alienate, as those of a corporation. *Alienation in mortmain* is an alienation of lands or tenements to any corporation, sole or aggregate, ecclesiastical or temporal, partic-

vately to religious houses. Such conveyances were forbidden by Magna Charta.

Morton (mor'tun), Levi Parsons, vice-president of the United States, was born in Shoreham, Vermont, in 1824. In 1878 he was elected to Congress from New York; reelected in 1880; and from 1881 to 1885 was minister to France. He served as vice-president with President Harrison, 1889–93, and was governor of New York, 1895–96.

Morton, Oliver Perry, an American statesman, born in 1823 in Wayne County, Indiana; died in 1877. He was governor of Indiana, 1861–67; United States senator (Republican) from Indiana, 1867–77; and a member of the Electoral Commission in 1877.

Morton, Thomas, an English colonist, born in England about 1590; died at Agamenticus, Maine, about 1645. He was a leader in the colony at Mount Wollaston (Braintree), Massachusetts; but was twice sent back to England for unpuritanical conduct. He finally returned to Massachusetts in 1643 and was imprisoned for his 'scandalous' book, *The New English Canaan*, published in 1632.

Morton, Samuel George, naturalist, was born at Philadelphia, Pennsylvania, in 1799; died in 1851. He studied medicine in Philadelphia and Edinburgh, in 1839 was appointed professor of anatomy in the Pennsylvania Medical College. His great works are *Crania Americana* and *Crania Egyptica*. He was among the leading students of craniography and donated a large collection of human skulls to the Academy of Natural Sciences of Philadelphia.

Morton, William Thomas Green, dental surgeon, born at Charlton, Massachusetts, in 1819; died in 1868. While practicing in Boston, he discovered the method of producing anæsthesia with sulphuric ether.

Mosaic (mō-zā'ik), a term applied to a kind of inlaid work formed by an assemblage of little pieces of enamel, glass, marble, precious stones, etc., of various colors, cut, and disposed on a ground of cement in such a manner as to form designs, and to imitate the colors and gradations of painting. This kind of work was used in ancient times both for pavements and wall decoration, while in modern times paintings are by this means copied, and the art is also used in pavements, jewelry, etc. The most remarkable modern works of this kind have been executed by Roman, Venetian and Russian artists, those of the Roman school being the most celebrated, and consisting in particular of copies of notable paintings by the great artists, such as Raffaele, Domenichino, Guido, etc. For the production of these works rods of opaque colored glass are employed, an immense variety of colors and shades being used. Pieces are cut from the ends of these rods, according to the color required, and are arranged side by side, their lower ends being attached by the cement while their upper ends show the design. From such works, when on a small scale, sections may be cut across, each section exhibiting the pattern.

Mosaic Wool-Work, rugs, etc., made of variously-colored woolen threads, arranged so that the ends show a pattern. The threads are held firmly in a frame, so as to form a dense mass, with the upper ends of the threads presenting a close surface; this surface is smeared with a cement, and has a backing of canvas attached, after which a transverse section is cut the desired thickness of the pile, and so on with a number of similar sections.

Mosasaurus (mō-za-sa'rus), a gigantic extinct marine lizard occurring in the calcareous freestone which forms the most recent deposit of the Cretaceous formation. This reptile was about 25 feet long, and possessed a

Skull of *Mosasaurus Hofmanni*.

tail of a construction that must have rendered it a powerful oar.

Mosby John S., an American soldier, born in Virginia in 1833; died 1916. One of the ablest Confederate raiders in the Civil War.

Moscheles (mō'she-les), Ignaz, a pianist and composer, born at Prague in 1794, his father being a Jewish merchant. He was a professor of music at the Royal Academy, London, in 1821–46. Mendelssohn in Berlin and Thalberg in London were among his pupils, and at Mendelssohn's request Moscheles gave up his London professorship and took a similar post at Leipzig, retaining it till his death, in 1870. Among his finest compositions may be mentioned his *Concertos* Nos. 3, 4 and 5; the *Concertos Fantastique* and *Pathétique*; his *Sestett* and *Trio*; his *Sonatas Caractéristique* and *Mélancolique*; and his studies

Moschidæ (mos'ki-dē), the musk-deer family of animals. See *Musk-deer.*

Moschus (mos'kus), a Greek pastoral poet, a native of Syracuse. The time when he flourished is not accurately known, some making him a pupil of Bion, who is supposed to have lived under Ptolemy Philadelphus (third century B.C.), while others suppose him a contemporary of Ptolemy Philometor (B.C. 100). Four idyls form the whole of the remains of Moschus, of which the most beautiful is the lament for Bion.

Mosby, JOHN SINGLETON, soldier, born in Powhatan County, Virginia, in 1833; died May 30, 1916. During the Civil war he entered the Confederate service and became leader of an independent company of raiders who did very efficient work in Virginia in destroying supply trains, capturing outposts, etc. He was of great service to Lee in scouting and raiding work and escaped all efforts to capture him. After the war he engaged in legal practice, and was consul at Hong-Kong, 1875–85.

Moscow (mos'kō; Russian, *Moskva*), the second capital (in former times the only capital) of Russia. It is the chief town of the government of the same name, and it is situated in a highly cultivated district on the Moscva; about four hundred miles southeast of Petrograd, with which it is in direct communication by rail. It is surrounded by a wall or earthen rampart 26 miles in circuit and of no defensive value; and a considerable portion of the enclosed space is unoccupied by buildings. The quarter known as the Kreml or Kremlin, on a height about 100 feet above the river, forms the center of the town, and contains the principal buildings. It is enclosed by a high stone wall, and contains the old palace of the czars and several other palaces; the cathedral of the Assumption, founded in 1326, rebuilt in 1472; the church of the Annunciation, in which the emperors are recrowned; the cathedral of St. Michael; the Palace of Arms, an immense building occupied by the senate, the treasury and the arsenal; and the Tower of Ivan Veliki 1326, rebuilt in 1472; the church of the and having at its foot the great Czar Kolokol, or king of bells, 60 feet round the rim, 19 feet high, and weighing upwards of 192 tons, the largest in the world. Outside the Kreml the chief building is the cathedral of St. Vassili, with no less than twenty gilded and painted domes and towers, all of different shapes and sizes. Among the principal educational establishments are the Imperial University, founded in 1755 by the Empress Catharine. It has a rich museum and a library of 200,000 volumes, and is the most important of the Russian universities. Moscow is the first manufacturing city in the empire, and of late years its industrial and commercial activity has greatly increased. The principal manufactures are textile fabrics, chiefly woolen, cotton and silk, besides hats, hardware, leather, chemical products, beer and spirits. From its central position Moscow is the great entrepôt for the internal commerce of the empire. The foundation of the city dates from 1147.

Church of Vassili Blanskenoy, Moscow.

It became the capital of Muscovy, and afterwards of the whole of the Russian empire; but was deprived of this honor in 1703, when St. Petersburg (Petrograd) was founded. The principal event in the history of Moscow is its occupation by Napoleon's army in 1812 and the burning of it for the purpose of dislodging the French from their winter quarters. Following the overthrow of the monarchy and the establishing of the republic in 1917, during the European war, Moscow, than which there is no city more characteristically Russian, became the unofficial capital, and it was here that the Soviet met on March 14, 1918, to ratify a peace treaty with the Central Powers. (See *Russia.*) Pop. (1913) 1,635,000. The government of Moscow forms an undulating tract of about 12,855 square miles. Pop. 3,303,400.

Moselle (mo-zel'), a river which rises in France, in the Vosges mountains, and flows past Metz into the Rhine at Coblentz; total length 314 miles.

Moselle (mō-zel), formerly a department of France; area, 2084 square miles. The southeastern and major part was ceded to Germany in 1871; the remainder, united to Meurthe, forms the new department of Meurthe-et-Moselle (which see).

Moses (mō'zes), leader, prophet, and legislator of the Israelites, was born in Egypt about 1600 B.C., during the time of the oppression of the Hebrews. His history, as given in the Hebrew scriptures, is as follows: His father, Amram, and mother, Jochebed, both of the race of Levi, were obliged to expose him in obedience to a royal edict, but placed him in a basket of bulrushes on the river border, where he was found by the daughter of the Egyptian king as she went to bathe. She adopted him as her son, and it is believed that she had him educated for the duties of the priesthood, the means of instruction thus afforded him being the best which his time possessed. His expedition into Ethiopia, in his fortieth year, as leader of the Egyptians, when he subdued the city of Saba (Meroe), won the affections of the conquered Princess Tharbis, and married her, rests only on a tradition preserved by Josephus. An outrage committed by an Egyptian on a Hebrew excited his anger, and he secretly slew the Egyptian. The deed became known, and he escaped the vengeance of the king only by a hasty flight into Arabia. Here he took refuge with Jethro, a Midianitish prince and a priest, and espoused his daughter Zipporah. The promises of God that his race would become a great nation occupied much of his thoughts, and at last God appointed him the chosen deliverer from the bondage in Egypt. Being slow of speech, and possessing none of the arts of an orator, God gave him power to prove his mission by miracles, and joined to him his elder brother Aaron, a man of little energy, but of considerable eloquence. Thus prepared, Moses returned to Egypt at the age of eighty years to undertake the work. At first he had the greatest obstacles to overcome, but after the visitation of ten destructive plagues upon the land, Pharaoh suffered the Hebrews to depart. Moses conveyed them safely through the Red Sea, in which Pharaoh, who pursued them, was drowned with his army. New difficulties arose, however. The distress of the people in the desert, the conflicts with hostile races, the jealousies of the elders, often endangered his authority and even his life, despite the miraculous attestations of his mission. During the term of the encampment at Sinai he received the Ten Commandments and the laws for the regulation of the lives of the Israelites. When they were already near the end of their journey towards Canaan Moses saw himself compelled, in consequence of new evidences of discontent, to lead them back into the desert, for forty years more of toilsome wandering. He was not himself permitted, however, to see the Israelites settled in their new country, on account of a murmur which, in the midst of his distress, he allowed to escape against his God. After appointing Joshua to be the leader of the Hebrews he ascended a mountain beyond Jordan, from which he surveyed the land of promise, and so ended his life in his 120th year. All superstitious reverence for his bones or his place of sepulture was prevented by the secrecy of his burial, and its effectual concealment from the people. See *Pentateuch*.

Mosheim (mos'hīm), JOHANN LORENZ VON, a German theologian, born at Lübeck in 1694, studied at Kiel. In 1723 he became professor of theology at Helmstädt. In 1747 he was appointed professor and chancellor of the University of Göttingen, where he remained till his death in 1755. Mosheim was the father of ecclesiastical history. His principal work on this subject is the *Institutiones Historiæ Ecclesiasticæ* (1755), afterwards published under various other forms, and translated into German and English.

Moskwa, BATTLE OF THE. See *Borodino*.

Moslem (mos'lem; Arabic, *muslim*, a true believer; plural, *muslimin*, hence the corrupt form, *mussulman*), a general appellation in European languages for all who profess Mohammedanism.

Mosque (mosk), a Mohammedan church or house of prayer. These buildings are constructed in the Saracenic style of architecture, and often astonish by their extent and the grandeur and height of their cupolas or domes. In these Mohammedan places of worship we find neither altars, paintings, nor images, but a great quantity of lamps of various kinds, arabesques which form the principal interior ornament, and sentences from the Koran written on the walls. Every mosque has its minaret or minarets (which see). The buildings are often quadrangular in plan, with an open interior court, where are fountains for ablutions. The floor is generally covered with carpets, but there are no seats. In the direction towards Mecca is the *Mihrab*, a recess in the wall to direct the worshipers where to turn their eyes in prayer, and near this is the *minber* or

pulpit. The buildings may embrace accommodation for educational purposes, etc., besides the temple proper.

Mosquito (mus-kē'to), a general name for such insects of the gnat family as inflict a severe bite and make themselves a pest to people residing in warm climates, or during the warm season in many arctic regions. As a protection for sleepers close curtains of gauze (mosquito nets or curtains) are used; and the skin is also rubbed with various preparations to prevent their bites, and fires are lighted to drive them off. It has been discovered within recent years that mosquitoes are not alone a pest, but a serious danger to mankind, as conveyors of the germs of several diseases, especially yellow fever and malaria. As the mosquito infects man with those diseases the diseased man infects other mosquitoes, and thus the maladies are spread. By screening the windows of hospitals and sleeping rooms Havana was freed from yellow fever during the American occupation in 1898 and the Panama Canal district was likewise freed from this fatal malady. In like manner malaria has been prevented in the Roman Campagna and other places. The discovery is one of extreme importance and has led to the study of other insects suspected of germ-bearing habits or properties. See *Malaria* and *Yellow Fever*. See *Gnat*.

Court of the Mosque of Tooloon, Cairo.

Mosquito Territory (mus-kē'tō), a region of Central America, lying on the Caribbean Sea, and forming the eastern seaboard of Nicaragua. For a considerable period it was governed by a native chief, and was under British protection, but in 1860 it was made over to the State of Nicaragua. The capital is called Bluefields.

Moss-agate. See *Mocha-stone*.

Moss (mos), the name given to a group of cryptogamic or flowerless plants of considerable extent, and of great interest on account of their very singular structure. They are in all cases of small size, seldom reaching a foot in height, but having a distinct axis of vegetation, or stem covered with leaves; and are propagated by means of reproductive apparatus of a peculiar nature. They are formed entirely of cellular tissue, which in the stem is lengthened into tubes. Their reproductive organs are of two kinds—axillar cylindrical or fusiform bodies, containing minute roundish particles; and thecæ or capsules, supported upon a stalk or *seta*, covered with a *calyptra*, closed by an *operculum* or lid, within which is a *peristome* composed of slender processes named *teeth*, and having a central axis or *columella*, the space between which and the walls of the theca is filled with minute *sporules*. Masses are found in cool, airy, and moist situations, in woods, upon the trunks of trees, on old walls, on the roofs of houses, etc. The genera of mosses, which are

numerous, are principally characterized by peculiarities in the peristome, or by modifications of the calyptra, and of the position of the urn, or hollow in which the spores are lodged.

Mostar (mos-tär'), the capital of Herzegovina. It lies on both sides of the Narenta, in a plain about 6 miles long by 2½ miles broad; is walled, and has a vizier's palace, a number of mosques, and two extensive well-supplied bazaars. It carries on a considerable trade. Pop. 14,500.

Mosul (mō-sōl'), a [illegible] of Asiatic Turkey, 220 miles northwest of Bagdad, on the right bank of the Tigris, opposite the remains of the ancient Nineveh, where there is a bridge of boats. The houses are mostly built of sun-dried bricks, and besides numerous mosques, there are churches of the Nestorians, Jacobites, and other [illegible]. It has a transit trade between Bagdad, Syria, Kurdistan and Constantinople. Its principal manufactures are [illegible] stuffs. It was formerly celebrated also for its muslins (hence the name *muslin*). Pop. estimated at 75,000.

Motacilla (mot'a-sil-a), a genus of passerine b[illegible] including the wagtails.

Motazilites (mo-taz'il-its), a numerous and powerful sect of Mohammedan heretics, who to a great extent denied predestination, holding that man's actions were entirely within the control of his own will. They maintained also that before the Koran had been revealed man had already come to conclusions regarding right and wrong, and held extremely heretical opinions with reference to the quality or attributes of Deity. They appeared a few generations after Mohammed, and became the most important and dangerous sect of heretics in Islam.

Motet (mō-tet'), in music, a name applied to two different forms of composition: (1) a sacred cantata, consisting of a number of unconnected movements, as solos, duets, trios, quartets, choruses, fugues, etc. (2) A choral composition, usually of a sacred character, beginning with an introductory song, followed by several fugal subjects, the whole ending with the exposition of the last subject, a repetition of the introduction, or a special final subject.

Moth, the popular name of a numerous and beautiful division of lepidopterous insects, readily distinguished from butterflies by their antennæ tapering to a point instead of terminating in a knob, by their wings being horizontal when resting, and by their being seldom seen on the wing except in the evening or at night (though some moths fly by day); hence the terms crepuscular and nocturnal lepidoptera applied to them. Among the more notable of the moths are the 'feather' or 'plume-moths,' the death's-head moth, the 'clothes-moths,' and the 'silk-moth' (*Bombyx mori*).

Mother Carey's Chicken, the sailors' name for the stormy petrel. See *Petrel*.

Mother-of-pearl, or NACRE, the hard silvery brilliant internal or nacreous layer of several kinds of shells, particularly of the oyster family, often variegated with changing purple and azure colors. It is destitute of coloring matter, but is composed of a series of minute and slightly imbricated layers or ridges which have the power of decomposing the rays of light, thus producing beautiful iridescent hues. The large oysters of the tropical seas alone secrete this coat of sufficient thickness to render their shells available for the purposes of manufacture. Mother-of-pearl is extensively used in the arts.

Mothers' Pensions. See *Pensions, Mothers'*.

Mother's Day In 1913, by a resolution of Congress, the observance of a day under this title was instituted, the President issuing a proclamation for the first National Mother's Day in May, 1914, and fixing the second Sunday in May for its annual date. Its object was the well-being and honor of the home, its observance demanding some act of kindness, gift or tribute in remembrance of the mother—and father also—to whom grateful attention is due. An International Mother's Day Association was later organized.

Motherwell (muth'er-wel), a town in Scotland, county of Lanark, 12 miles southeast of Glasgow. The inhabitants are chiefly employed in its extensive coal mines, iron and steel works, foundries and engineering shops. Pop. (1911) 40,380.

Motherwell, WILLIAM, a Scottish poet and antiquary, born at Glasgow in 1797; died in 1835. Educated at Edinburgh and Paisley, at the age of fifteen he was apprenticed to the sheriff-clerk of the latter town, and became sheriff-depute in 1819. It was while in this situation that he did his best work both as poet and ballad-collector. After editing the collection of songs called the *Harp of Renfrewshire* (published in 1819), he compiled the more important collection of ballads published in

1827, under the title of *Minstrelsy: Ancient and Modern*, with a historical introduction and notes. In 1828 he became editor first of the *Paisley Advertiser*, and then (1830) of the *Glasgow Courier*. He published in 1832 a collection of his own poems.

Motherwort (muth'er-wort; *Leonurus cardiaca*), a labiate plant, 3 feet high, flowers in crowded whorls, white with a reddish tinge, found in some parts of Europe and North America.

Motion (mō'shun), in physical science, is the passing of a given body from one place to another. We have no idea of absolute position in space, so that when we speak of the motion of a point it is only in relation to some point regarded as fixed. Thus our conception of the movement of the earth is derived from its relation in position to the sun and stars. Bodies move in various directions, their motion being described as *rectilinear* when they move in a straight line, *curvilinear* when they move in a curve, *vibratory* when they move to and fro in relation to a fixed point, *rotatory* when they turn on an axis, and *circular* when they sweep round a given point. For Newton's laws of motion see *Dynamics*.

Motley (mot'li), JOHN LOTHROP, historian and diplomatist, born at Dorchester, Massachusetts, in 1814; died in 1877. He was educated at Harvard University and at Göttingen in Germany: published two novels called *Morton's Hope* (1839) and *Merry Mount* (1849), both of which were unsuccessful; contributed to the *North American Review*; and entered political life as a member of the Massachusetts House of Representatives. He published, after ten years' labor and a journey to Europe, his great *History of the Rise of the Dutch Republic* in 1856, a work which was further developed in the *History of the United Netherlands* (1860-65); and the *Life and Death of John Barneveld* (1874). He was ambassador from the United States to Vienna in 1861-67, and to London in 1869-70. His correspondence, in 2 vols., edited by Geo. W. Curtis, has been published (1889).

Mot-mot, a beautiful South American fissirostral bird of the genus *Momotus* or *Prionites*, about the size of a jay.

Motor (mō'tur), a machine for transforming natural energy in various forms into mechanical work, the term in the widest sense embracing windmills, water wheels, and turbines, steam engines, the various kinds of gas engines, compressed air motors, petroleum motors, electric motors, etc. Steam, hot air, gas and petroleum motors are all thermic motors, because in all of them the source of energy is heat. See *Electro-Motors*.

Motor-car. See *Automobile*.

Motor Cycle, a form of bicycle in which a gasoline engine, occupying the space between the wheels, is the means of propulsion. The earliest designs were one-cylindered, but two-cylinder machines are now extensively used, and some makers are building them with four cylinders. The motor cycle has all the features of operation and control that belong to the gasoline-driven automobile (*q. v.*), including gasoline tank, oil tank, carburetor, magneto, clutch, throttle, spark-advance control, muffler and so forth. The latest motors are of the four-cycle type, producing a power stroke in each cylinder once in every two revolutions of the flywheels. The four cycles or strokes of piston travel are as follows: intake, compression, explosion and exhaust. With two cylinders there is a power stroke for every revolution of the flywheels. Change-speed transmissions are provided, giving two or three different speed ratios between motor and rear wheel. The engine is started by means of a kick-starter or by pedalling. A side car or a delivery wagon may be added.

Motor-generator Set, an alternating current motor coupled to a direct current generator. It is often used in arc lighting and in supplying three-wire direct current systems from alternating mains.

Mott, LUCRETIA (COFFIN), reformer, was born in Nantucket, Massachusetts, in 1793; died in 1880. She married James Mott, like herself interested in the anti-slavery cause. She joined the Friends in 1818. In addition to her advocacy of anti-slavery, she was an able advocate of equal suffrage.

Mott, VALENTINE, surgeon, was born at Glen Cove, Long Island, in 1785. He studied in London and Edinburgh. In 1811 he was professor of surgery in Columbia College; afterwards in other colleges. Dr. Mott gained world-wide reputation for boldness and originality as a surgeon. He died in 1865.

Mouflon, MOUFLON (mō'flon), the *Ovis*, or *Caprovis*, *Musimon*, a wild animal of the sheep kind, inhabiting the mountainous parts of Corsica, Sardinia, and Greece. It is about the size of a small fallow-deer, and although covered with hair instead of wool, bears a stronger resemblance to the ram than to any other animal, both in regard to its horns and its general conformation.

Moukden. See *Mukden.*

Mould (möld), a minute fungoid or other vegetable growth of a low type, especially one of such vegetable organisms as appear on articles of food when they are left neglected, on decaying matters, bodies which lie long in warm and damp air, animal and vegetable tissues, etc.

Mouldings (möld'ings), in architecture, a general term applied to the varieties of outline or contour given to the surfaces or edges of various subordinate parts or features of buildings, whether projections or cavities, such as cornices, bases, door or window jambs, lintels, etc.

Moulins (mö-lan), a town of France, capital of the department of Allier, on the river of that name, 104 miles S. S. E. of Paris. It has among its edifices a cathedral, a college, an old castle, and its chief manufactures are cutlery, hosiery, ivory articles, etc. Pop. (1911) 21,901.

Moulmein (möl-min'), or MAULMAIN (mal-mān'), a seaport of Burmah, division of Tenasserim, at the mouth of the river Salween. It has a good harbor, and a considerable trade chiefly in teak, cotton, rice, tobacco, stick-lac, lead, copper, cocoanuts, hides and live stock. Pop. 58,346.

Moult (mölt), the process of shedding or casting feathers, hair, skin, horns, etc. The word is most commonly used with regard to birds; but other animals, such as crabs and lobsters, which shed their entire shells, frogs and serpents, which cast their skins, and deer, which shed their horns, also moult.

Moultrie (möl'tri), WILLIAM (1731–1805), an American Revolutionary soldier, son of a Scotch Physician who settled in South Carolina in 1733. He became a captain of militia and in 1761 fought against the Cherokee Indians. In the popular movements preceding the revolution he took a prominent part and was a delegate from St. Helena Parish to the South Carolina provincial congress. He was made a colonel the same year, and for the defense of Charleston placed a battery at Haddrell's Point, driving off two blockading vessels. The fleet of Sir Peter Parker and Sir Henry Clinton threatened Charleston, and Colonel Moultrie constructed a fort of palmetto logs on Sullivan's Island. On June 28, 1776, the fort was fiercely bombarded, but the projectiles sank harmlessly into the soft palmetto logs, and Moultrie, though poorly supplied with ammunition, was able to defeat the British, who had a casualty list of 225, the American loss being but 35 men. The fort was afterward called Fort Moultrie. On the surrender of Charleston he became a prisoner of war and was exchanged for Burgoyne. He was made a major-general and was elected governor of South Carolina in 1785 and again in 1794.

Mound Birds (*Megapodidæ*), a family of gallinaceous birds, remarkable for the large mounds which they build as incubators for their eggs. They are natives of the islands of the Pacific. The Australian species (*M. tumulus*) is about the size of the common fowl, and builds mounds of vegetable refuse, leaves, and soil, adding to them yearly till they become of great size. The largest on record measured 150 feet in circumference. The eggs are laid in separate holes in the mound, at a depth of 5 or 6 feet, and left to be hatched by the warmth of the decomposing vegetable matter. In a related genus (*Leipoa*) the eggs are laid separately in a circle in the center of the mound and deeply covered with compost. In the genus *Lallegalbus* the mounds are used socially by a number of birds.

Mound Builders, the name given to the Indians who formerly inhabited the Ohio and Mississippi valleys, and have left some very remarkable earthworks as their only memorials. The best known group of mounds is near Newark, Ohio, and consists of elaborate earthworks, in the form of a circle, octagon and square, enclosing an area of about 4 square miles, on the upper terrace between two branches of the Licking River. In addition, the neighboring hills are crowned with tumuli or mounds, apparently erected by the same people and containing human remains. Similar mounds are found in many parts of the Mississippi Valley States, some of them seeming to have been erected for purposes of defense, others for burial, and some very large ones for religious purposes. One, of considerable length, is in the form of a snake, with what seems intended for an egg in its mouth. Others resemble quadrupeds, a trunked animal, like the elephant, being among them. The Mound Builders were formerly supposed to be an anterior, semicivilized race, but it is now believed that they were the ancestors of the present Indians, as some of the Gulf State Indians have built mounds within historic times.

Moundsville, a city of West Virginia, capital of Marshall Co., on the Ohio River, 12 miles below Wheeling. It is in a coal-mining district, and has glass and brick works,

stove, cigar and whip factories. It is named from a remarkable artificial mound nearly 75 feet high, of prehistoric Indian erection. Pop. 8918.

Mountain (moun'tin), a mass of earth and rock rising above the surface of the globe higher than a hill. Mountains are usually found in groups, systems, ranges, or chains, though isolated mountains, due to volcanic action, are also found. The elevation of great mountain masses is due to gigantic subterranean movements long continued; but mountains of considerable mass have also been carved out by surface denudation. The highest mountain in the world, so far as known, is Mount Everest, one of the Himalayan range, which is 29,002 feet above the level of the sea.

Mountain, The. See *Montagnards.*

Mountain-ash. See *Rowan-tree.*

Mountain-blue, a carbonate of copper with azure vitreous luster liable to change to green if substance is mixed with oil.

Mountain-cork, a white or gray variety of asbestos, so-called from its extreme lightness, as it floats in water. Called also *Mountain-leather.*

Mountain-limestone, a calcareous rock, containing marine shells and corals, devoid of coal. It is situate immediately below the millstone-grit, and above the old red sandstone. It is otherwise termed *Carboniferous Limestone.*

Mount Carmel, a city, county seat of Wabash County, Illinois, on the Wabash River, 24 miles S. W. of Vincennes. It has railroad shops, flour and saw mills, and other industries. Pop. 9000.

Mount Carmel, a borough of Northumberland County, Pennsylvania, 6 miles E. of Shamokin, on the Lehigh Valley and other railroads. Coal is very extensively mined here, and mining machinery, miners' supplies, etc., are manufactured. Pop. 17,532.

Mount Clemens, a city of Michigan, county seat of Macomb County, on the Clinton River, two miles from Lake St. Claire, near the famous 'Flats' and twenty miles N. E. of Detroit. It is a health resort, with baths famous for the cure of rheumatism, nervous and blood diseases. Wagons and sleighs, lumber, sugar, burial caskets, semi-porcelain dinner ware, automobiles and automobile parts are manufactured. Pop. 7707.

Mount Desert, a mountainous island in the Atlantic, belonging to Hancock County, Maine, off the coast; was settled by the French in 1608. It is 14 miles long and 7 miles wide. It is a favorite place of summer resort.

Mount Holly, a town of New Jersey, capital of Burlington County, on Rancocas Creek, 19 miles E. by N. of Philadelphia. It is in an agricultural district, and has manufactures of shoes, hammocks, canned goods, etc. Pop. 5500.

Mount McKinley, a mountain of Alaska, about 20,500 feet high, being the taliest known peak on the North American continent. It is about 125 miles N. of Cook Inlet, near the intersection of 63° N. lat. and 151° W. lon.

Mount Pleasant, a borough of Westmoreland County, Pennsylvania, 32 miles S. E. of Pittsburgh. It has glass, coke and brewing interests, and coal is mined nearby. Pop. 5812.

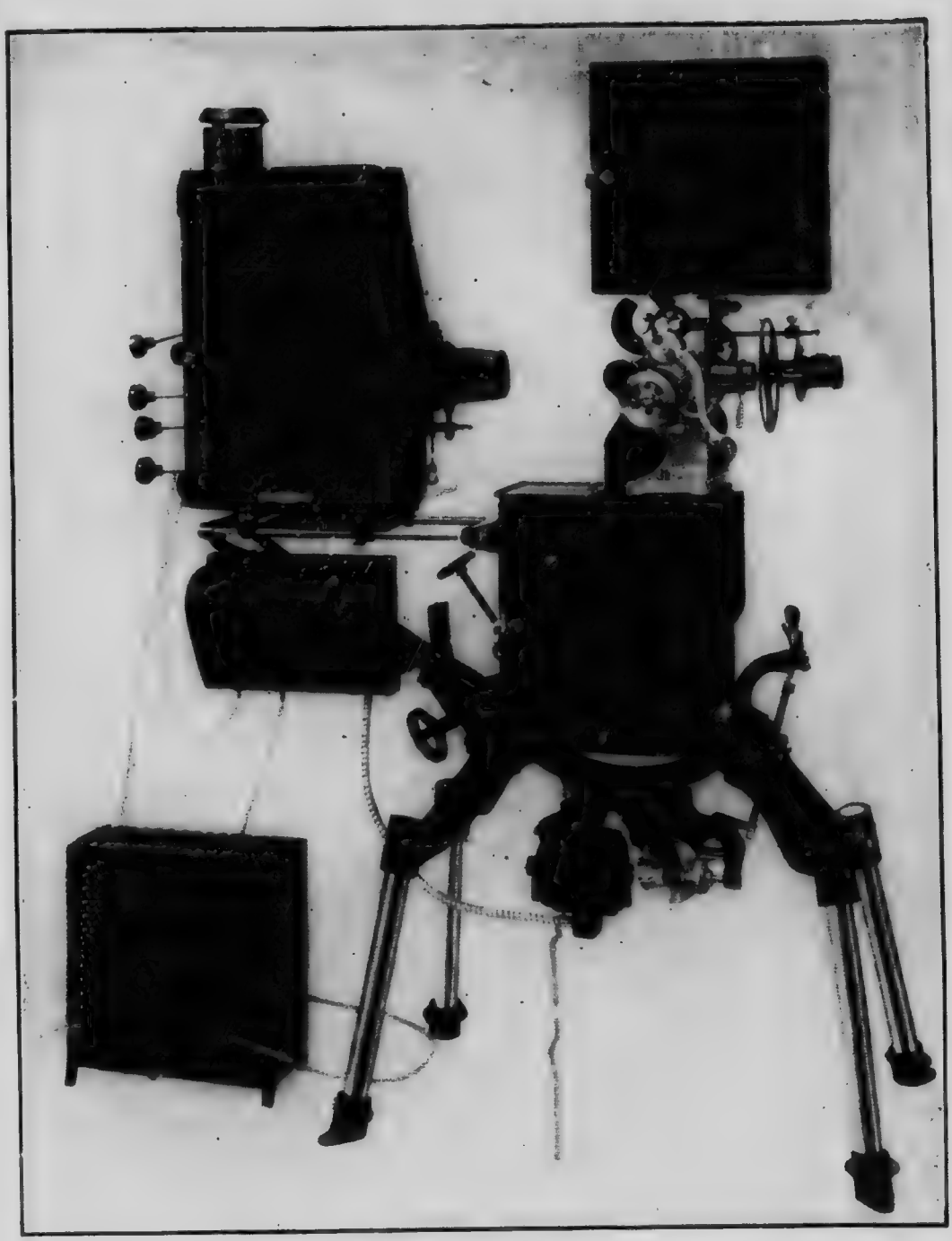
Mount Vernon, memorable as the residence of George Washington, is in Fairfax County, Virginia, on the west bank of the Potomac, 15 miles below Washington City. The mansion and six acres surrounding were purchased in 1859 by the Ladies' Mount Vernon Association, and thus secured as a national possession. It contains various articles of interest relating to Washington and his family.

Mount Vernon, a city, county seat of Jefferson County, Illinois, 77 miles S. E. of St. Louis, Mo. Its manufactures include railroad cars, cut glass, bricks, lumber and flour. Pop. 10,000.

Mount Vernon, a city of Indiana, county seat of Posey County, on the Ohio River, 20 miles below Evansville, in a rich agricultural region. It has several saw and flour mills, foundry, cooperages, and straw-board and other industries. Pop. 5563.

Mount Vernon, a city of Westchester County, New York, on the Bronx River, 15 miles N. of New York City. It is a residential city for New York business people. Pop. 35,000.

Mount Vernon, a city of Ohio, county seat of Knox County, on Vernon River, 45 miles N. E. of Columbus. It has abundant water power and manufactures of importance, including foundries, steel structural, engine and glass works, etc. Pop. 9087.



MOVING PICTURE PROJECTING MACHINE

This is one of the latest ypes of machines for throwing moving pictures on a screen. In the upper left hand corner is the electric arc light. To the right are the boxes which hold the film reels, and between them the driving gears, revolving shutter and lens. In the lower left hand corner are the resistance coils for the motor.

Mount Washington, the highest peak in New England, is 6226 feet high. It is in the White Mountains of New Hampshire, 85 miles N. W. R. of Concord, and a favorite place of resort in the heated term of summer.

Mourning (môr'ning), as the outward expression of grief, has greatly varied at different times and among different nations. Thus the eastern nations and the Greeks cut off their hair, while the Romans allowed the beard and hair to grow; and as an evidence of mourning the ancient Egyptians wore yellow; the Ethiopians, gray; the Roman and Spartan women, white, which is still the color of grief in China, Japan and Siam; in Turkey, blue and violet; and in the other European countries black is used for this purpose. The Jews, in sign of grief at the loss of their relatives, rent their garments, tore out their hair, and wore coarse garments of a dark color; and with the Greeks and Romans it was the custom to lay aside all ornaments of dress, to abstain from the bath and other indulgences.

Mourzouk, or MURZUK (mur-zuk'), the capital of the pashalic of Fezzan, in the regency of Tripoli, situated 480 miles southeast of Tripoli. It is girt by an earthen wall, and was at one time a place of great commercial importance. Pop. about 6500.

Mouse (mous), the name of a number of rodents of which the most familiar is the domestic mouse (*Mus musculus* or *domesticus*), too well known to need description. The harvest-mouse (*Mus messorius* or *minutus*), the smallest of quadrupeds, is a hibernating mammal, and constructs a little nest of grass, etc., entwined round and supported by the stalks of the corn or wheat. The common field-mouse (*M. sylvaticus*) is of a dusky brown, with a darker strip along the middle of the back, while the tail is of a white color beneath. There are about a hundred members of the mouse genus, of which the common rat is one. The short-tailed field-mouse, or 'meadow-mouse,' is not a true mouse, but one of the voles (*Arvicola*). It is of a reddish-brown color, inclining to gray, the under parts are lighter, or ashy-brown, and the tail and feet are of a dusky-gray color. The dormouse also is of a different family from the true mice.

Mouse-ear Chickweed (*Cerastium*), a genus of plants, nat. order Caryophyllaceæ, consisting of many pubescent herbs with small leaves and white flowers, forming common weeds in all temperate and cold regions. It may be either annual or perennial.

Mousquetaires du Roi (mös-ke-tär dü rwa; 'musketeers of the king'), under the old French regime mounted companies of royal guards. They were instituted by Louis XIII, and served as a school to many distinguished French commanders.

Mouth, the aperture in the head of an animal through which food is received and voice uttered; or generally the anterior opening of the alimentary canal. In the higher animals the use of the mouth is for mastication, the emission of sound or voice, deglutition, and taste. In many animals of a low type of structure there is no distinct mouth. Thus in the simpler Protozoa the food is taken into the interior of the body by a process of intussusception, any portion of the surface being chosen for this purose, and acting as an extemporaneous mouth.

Moving Picture Machines. Two kinds of machines are employed in the taking and showing of moving pictures—motion picture cameras and motion picture projecting machines. The camera is the simpler mechanism of the two, consisting of a light proof box with separately enclosed reels for the exposed and unexposed film. At the front is the lens, back of which is the rotary shutter. The film, a long strip of transparent celluloid sensitised like a photographic plate, is lead through guides back of this shutter past the lens. The shutter interrupts the light for a brief space of time necessary to move the film into position for the next picture. Thus the motion of the film is intermittent, being stationary back of the lens for the time necessary to register the picture then, with the shutter closed, moving into position for the next picture. The motion is imparted by a hand crank on the outside of the camera through suitable grooved and toothed wheels to the perforated edges of the film. The sensitized films are made in lengths of about 1000 feet, each picture is ¾ x 1 inch in size, sixteen pictures to the foot, and has four perforations on either side for the driving sprockets.

The motion picture projecting machine consists of a powerful electric arc lamp from which the light passes through lenses, through the film which is passed before it with an intermittent motion by suitable machinery either hand or electrically operated. In front of the film is a rotary shutter, as in the camera, which interrupts the light long enough to avoid blurring the successive impressions on the mind of the observer during the long

interval of time necessary to move the film into a new position. In front of the shutter are lenses which magnify the picture thrown on the screen to about 35,000 times the size of the film picture. The design of this machine is extremely ingenious. Above and below the projection head (which contains the machinery and lenses) are the film reels, the upper being the feed-reel and the lower the takeup-reel. Sprocket wheels control the action of the film. The top feed sprocket pulls the film from the upper reel, the middle intermittent sprocket turns in a way to give each picture a certain time of stop over the projection aperture, and the bottom takeup sprocket assists in winding the film on the takeup-reed. Modern machines have many devices for the prevention of fire in the machine, which is a considerable source of danger owing to the inflammable character of the film and the igniting power of the light if allowed to play on a motionless film. These devices consist of five shutters which automatically cut off the light while the film is at rest; film-shields which enclose the film, five valves which prevent the entrance of fire into the magazines and a fire-proof booth which encloses both machine and operator.

Moving Picture Plays. The evolution of the moving picture play or photo-play from the crude moving picture to the distinct artistic form of the present day followed much the same course as the evolution of the modern drama from the crude mimicry of early times. The period of its evolution, however, was much briefer, occupying but a few years. The early moving picture was merely a reproduction of transcripts from actual life with little attempt at artistic arrangement. Soon, however, the obvious expedient of using the moving picture to tell a story occurred to the producers and the steps to the modern drama began with farce or broad comedy of the slap-stick variety, followed by photo-dramatization of popular plays and novels until the perfected motion picture play of the present day was attained.

To reach this state of perfection it was necessary to evolve a whole new technique. In the early days of the enterprise it was thought that the methods of the stage could be applied directly to motion picture production. Gradually the possibilities and limitations of the art come to be appreciated and a new and distinct form of play evolved.

In a technical sense the moving picture play is more nearly related to pantomime than drama though differing essentially from both. In pantomime all thought is conveyed by gesture while in drama language is made to carry a large portion. In a moving picture, however, the characters seem to be speaking although they cannot be heard. Facial expressions and gestures are used as far as possible to give expression, helped out where necessary by leaders or captions, written or printed matter shown on the screen to explain an otherwise unintelligible situation. These limitations force the producers to choose plays in which action is predominant over nice shadings of character or psychological analysis. Change of scene is frequent and scenes may be arranged in any way best suited to illustrate the plot, thus giving the playwright a very flexible structure and the opportunity to employ a great deal of detail which adds to the verisimilitude and has made the moving picture play a dangerous rival to the legitimate stage.

In 1914, twenty years after the first exhibition of the Edison kinetoscope, it was estimated that approximately $500,000,000 were at that time invested in the business in the United States, and that the total of pictures printed by ten leading companies (handling between 70 and 80 per cent. of the business in the United States) turned out between 2,500,000 and 3,000,000 feet of film every week. There are 1000 feet of film used in a one-reel picture. As some plays are given in as many as six reels, 6000 feet of film are often used in a single production. One leading film company employs 1000 persons and from 25 to 500 extras a day. See *Cinematograph*.

Moving Plant (*Desmodium gyrans*, nat. order *Leguminosæ*), a native of India, also called telegraph plant, with trifoliate leaves. It is remarkable for the motions of its terminal leaflets, especially under the influence of light and heat.

Mozambique (mō-zam-bēk'), a district of Portuguese East Africa, extending from Cape Delgado to Delagoa Bay, and to an uncertain distance into the interior; area estimated at about 100,000 square miles, only a small part of which is occupied. The coast is generally low, beset with reefs and small islands, but possessed of numerous good harbors. Inland there rises a broad plateau, with groups and chains of mountains running mostly parallel to the coast, and nowhere reaching a great height. The climate is excessively hot, and, except on the elevated regions, unhealthy. Most tropical fruits and cotton thrive, and the forests produce valuable woods. The prin-

cipal articles of trade are ivory and skins. The capital is the town of Mozambique, situated upon a small coral island near the coast, having a good harbor and a small trade. Pop. about 7000.

Mozambique Channel, the passage between the east coast of Africa and the island of Madagascar; length about 1050 miles, average breadth about 450 miles. In its north part lie the Comoro Islands.

Mozarabs (mo-zär'abz), a name applied by the Mohammedans in Spain to the Christians among them who retained their own religion. The Mozarabic liturgy which they used was suppressed about 1060, but was revived at the beginning of the sixteenth century in Toledo, where it is still preserved.

Mozart (mō-särt'; German pron. mō'-tsärt), JOHANN CHRYSOSTOMUS WOLFGANG AMADEUS, a great German composer, born at Salzburg in 1756; died at Vienna in 1791. At the age of four years his father, Leopold Mozart, a violinist of repute, began to teach him some minuets and other small pieces on the harpsichord. From this period he made rapid progress, and a concerto for the harpsichord, which he wrote in his fifth year, was so difficult that only the most practiced performer could play it. In his sixth year Mozart was taken by his father, along with his sister, to Munich and Vienna, where the little artists were received at court with great favor. In 1763 the family made a journey to Paris, where Mozart published his first sonatas for the harpsichord; and in the following year they proceeded to England, where the child-musician performed before the court the most difficult compositions of Bach and Handel. Returning to Salzburg after visiting Holland, the family again went to Vienna in 1767, where the boy received a commission from the emperor to write the music of a comic opera, but owing to the opposition of the court musicians the work was never performed. In 1769 Mozart, who had been made master of the concerts at the court orchestra at Salzburg, commenced a journey to Italy in company with his father. In Rome he wrote down, on hearing it, the famous *Miserere*, annually sung in the Sistine Chapel during the holy week. At Milan in 1770 he composed, in his fourteenth year, his first opera, *Mithridates*, which was performed more than twenty times in succession. Henceforth he resided chiefly in Salzburg, but also visited Paris, Munich, and finally Vienna. In the latter city, although he was appointed composer to the court, he found it necessary to maintain himself by giving lessons in music and writing waltzes. Notwithstanding this poverty it was here that most of his best work, such as his famous operas, *Le Nozze di Figaro* ('The Marriage of Figaro'), *Don Giovanni*, *La Clemenza di Tito* ('Clemency of Titus'), *Die Zauberflöte* ('The Magic Flute'), and his last work, the *Requiem*, were written. It was here also that the best pianist and greatest composer of his time—perhaps of the world—died in obscurity and was buried in a pauper's grave. The extent of work done by Mozart during his short life is almost incredible, and in every department of composition, whether vocal or instrumental, he excelled. In the history of music he stands most prominently forward as an operatic composer, his *Don Giovanni*, *Magic Flute* and *Marriage of Figaro* being works previously unequaled and never since surpassed. In his character he was kind-hearted, guileless, cheerful, void of envy, almost boyish to the last.

Mtzensk (m'tsensk), a town of Russia, province of Orel, 35 miles N. E. of Orel. Pop. 9390.

Mualitch'. See *Mukalitch*.

Much Woolton, a town of England, county of Lancaster, 5 miles southeast from Liverpool. There are extensive quarries in the neighborhood. Pop. 4320.

Mucilage (mū'sil-ij), a solution of some gummy substance in water, giving it a certain consistence; in chemistry, one of the proximate elements of vegetables, a carbohydrate ($C_6H_{10}O_5$, or similar formula). It is contained abundantly in gum tragacanth, many seeds, as linseed, quince seed, etc., and certain roots, as marsh-mallow. It forms a thick jelly with water, and when boiled with dilute sulphuric acid gives rise to a sugar and a gum.

Mucius Scævola (mū'si-us sev'o-la), the hero of a Roman legend to the effect that having attempted to assassinate Porsenna, King of Etruria, Mucius was ordered to be burned alive, but he won the king's favor and pardon by fearlessly holding his hand in the fire.

Mucor (mū'kur), a genus of fungi to which most of the matter constituting mold on cheese, paste, decaying fruits, and other substances is referred. The most common species is *M. mucēdo*.

Mucous Membrane (mū'kus), a membrane that lines all the cavities of the body which open externally and secretes the fluid mucus. See *Mucus*.

Mucu'na. See *Cowitch.*

Mucus (mū'kus), a viscid fluid secreted by the mucous membrane of animals, which it serves to moisten and defend. It covers the lining membranes of all the cavities which open externally, such as those of the mouth, nose, lungs, intestinal canal, urinary passages, etc. It is transparent, glutinous, thready, and of a saline taste; it contains a great deal of water, chloride of potassium and sodium, lactate of sodium and of calcium, and phosphate of calcium. Mucus forms a layer of greater or less thickness on the surface of the mucous membranes, and it is renewed with more or less rapidity. Besides keeping these membranes in a moist and flexible condition, it also protects them against the action of the air, of the aliment, the different glandular fluids, and agencies that might otherwise irritate and inflame.

Mud, in geology, a mixture of clay and sand with organic matter. Mud may be argillaceous, calcareous, or otherwise, according to the most notable ingredient which enters into its composition.

Mudar (mū'dar), the Indian name of *Calot. Ipis gigantea*, a shrub or small tree of the nat. order Asclepiadaceæ, and also given to a substance used medicinally in India with great alleged effect in cutaneous diseases, and obtained from this and another species (*C. procēra*). The inner bark of *C. gigantea* also yields a valuable fiber.

Mud-bath, a kind of bath connected with some mineral springs, consisting of mud transfused with saline or other ingredients, in which patients suffering from rheumati. n, etc., plunge the whole or portions of the body. Such are the mud-baths of St. Amand, or of Barbotan, in France.

Mud-fish. See *Dipnoi.*

Mudir (mū-dir), a Turkish official at the head of a canton or part of a liva under a kaimakam; in Egypt, the governor of a province or *mudîrîyeh.*

Mudstone (mud'stōn), a term originally applied to certain dark-gray fine-grained shales of the Silurian system, but now extended to all similar shales in whatever formation they may occur.

Muezzin (mō-ed'zin), or MUED'DIN, a Mohammedan crier attached to a mosque, whose duty it is to proclaim the *ezan* or summons to prayers five times a day—at dawn, at noon, 4 P. M., sunset, and nightfall. He makes his proclamation from the balcony of a minaret; and as this elevated position enables a person to see a good many of the private proceedings of the inmates of the neighboring houses, the post of muezzin is often entrusted to a blind man.

Muffle (muf'l), in chemistry, an arched vessel resisting the strongest fire, and made to be placed over cupels and tests in the operation of assaying.

Mufti (muf'ti), in the Turkish Empire, a religious officer who exercises the functions of an authoritative judge in matters of religion. The muftis are chosen from among the ulemas or doctors of the law, and the grand mufti or Sheikh-ul-Islam is the highest officer of the church and the representative of the sultan in spiritual matters.

Muggletonians (mug-l-tō'ni-ans), a sect that arose in England about the middle of the seventeenth century, of which the founders were John Reeve and Ludovic Muggleton, who claimed to have the spirit of prophecy. They affirmed themselves to be the 'two witnesses' of Rev. xi, 3.

Mugwump (mug'wump), a political term, coined in the United States during the Presidential campaign of 1884, and applied to the members of the Republican party who refused to support the party nominee. The word comes from the Algonquin Indian language. It is still used to designate those who are independent in politics or otherwise.

Muhalitch, or MUALITCH (mu-hälēch'), a town of Asiatic Turkey, about 15 miles south of the Sea of Marmora. It has a considerable trade with Constantinople. Pop. about 7000.

Muhlenberg (mū'lin-burg), HEINRICH MELCHIOR, born in Hanover in 1711. He was the organizer of the Lutheran church in the United States. He arrived in Philadelphia in 1742, to take charge of the German settlements from Nova Scotia to Georgia. He founded the first Synod in 1748. He advocated the use of the English language in the churches. Died in 1787.

Muhlenberg College, in Allentown, Pennsylvania, founded in 1867, and named in honor of Heinrich Melchior Muhlenberg. It has endowed funds amounting to $275,000.

Muhlhausen (mül-hou'zen), a town of Saxony, Prussia, 29 miles N. W. of Erfurt. The medieval town-hall is a noteworthy edifice. It has manufactures of textiles and cigars, and dyeing, tanning and brewing are carried on. Pop. (1910) 35,083.

Mühlheim, or MÜLHEIM, a town of Germany, Rhine province, on the Ruhr, 16 miles north of Düsseldorf. Pop. (1910) 112,362.

Mühlheim, or MÜLHEIM, a town of Germany, Rhine province, 8 miles N. E. of Cologne. Pop. 53,355.

Muir (mūr), JOHN, a Sanskrit scholar, born at Glasgow in 1810; died in 1882. He was educated at the University, and joined (1828) the East India Company's Civil Service, filling various offices. His chief work was *Original Sanskrit Texts on the Origin and History of the People of India, Their Religion and Institutions*, 5 vols. (1858–70).

Muir, JOHN, an American geologist and explorer, born at Dunbar, Scotland, April 21, 1838; died December 24, 1914. He came to the United States in 1849, studied at the University of Wisconsin, 1860–64, and made extensive botanical and geological excursions. In 1876–79 he was a member of the U. S. Geodetic Survey and made several tours of exploration in the Northwest, discovering in Alaska the great glacier which bears his name. He was active for many years in the cause of forest reservations and parks, and his works include *The Mountains of California* (1894), *Our National Parks* (1901), etc.

Muir Glacier, a large glacier of Alaska, discharging into Glacier Bay, in about 58° 45′ N., and 136 5′ W. Its main trunk is 30 to 40 miles broad and is fed by numerous tributaries. At the sea it is some 2 miles wide and 100 to 200 feet high.

Mukden (muk'den), MOUKDEN, or FUNG-TIEN-FU, a town of China, capital of Manchuria and of the province of Leao-Tong, about 380 miles N. E. of Peking. It is surrounded by a wall and has also a wall which encloses the government offices, palace, and other buildings, and it was the residence of the Manchu sovereigns before their conquest of China. Around it were fought in 1904–05 the greatest battles of the Russo-Japan war. Pop. (1915) 184,389.

Mula (mōō'lä), a town of Spain, province of and 21 miles west from Murcia. The principal manufacture is earthenware. Pop. 12,731.

Mulatto (mū-lat'tō), a person that is the offspring of parents of whom one is white and the other a negro. The mulatto is of a dark color tinged with yellow, with frizzled or woolly hair, and in features resembles the European more than the African.

Mulberry (mul'bér-i), a fruit tree of the genus *Morus*, nat. order Moraceæ, akin to the Urticaceæ or nettles. The black or common mulberry (*Morus nigra*) is the only species worthy of being cultivated as a fruit tree. The fruit is used at dessert, and also preserved in the form of a syrup. The juice of the berries forms a light wine. The tree is not originally a native of Europe, though it thrives there. The white mulberry (*M. alba*) is the most interesting of the genus, on account of its leaves being used for food by silkworms. It came originally from China. The red mulberry (*M. rubra*) has fruit of a deep-red color, and is a valuable American tree. The paper mulberry (*Broussonetia papyrifera*) is a distinct genus, belonging originally to Japan, and now cultivated in Europe and America. In Japan the bark is used in making paper; the islanders of the Pacific use it to make clothing.

Mule (mūl), the name applied to any animal produced by a mixture of different species, but specifically denoting the hybrid generated between an ass and a mare. The head of the mule is long and thin, its ears long, the upper part of its tail covered with short hairs, and its mane short. (See *Hinny*.) The mule unites the sagacity of the horse with the dogged perseverance of the ass, and is docile in temper when fairly treated.

Mule Deer (*Cariocus macrotis*), also called the black-tailed deer, gets its name from its large ears. Among North American deer it is next in size to the wapiti and caribou.

Mulhouse (mul'hous), German, MÜLHAUSEN, a town in the department of Haut Rhin, France, on the River Ill and the Rhine-Rhone canal, about 56 miles S. W. of Strasbourg. Its industries include the manufacture of cotton, printing and dyes, chemicals, iron and other metal works, machine shops, etc. It is one of the great textile centers of the continent. It also carries on a large trade in grain, wine and lumber. It was a free town in 1273; joined the Swiss federation in 1515; in 1797 it was incorporated with the French republic, and was ceded to Germany with Alsace-Lorraine in 1871. It was captured by the French in 1914, but relinquished. By the peace treaty of 1919 (see *Treaty*), following the defeat of Germany in the European war, it was restored to the French Republic, with Alsace-Lorraine. Pop. 95,000.

Mull, an island on the west coast of Scotland, one of the Hebrides, belonging to Argyllshire, from which it is separated by the Sound of Mull and the Firth of Lorn; length 30 miles, breadth 29 miles. The island is for the most part mountainous, the highest point being Benmore, 3185 feet above sea-level. The

land in some parts is adapted for grazing, and there are numerous fresh water lochs. The only town is Tobermory. Pop. 4334.

Mullagatawny (mul-a-ga-ta'ni), a soup which is made with fowl or meat cut into small pieces and mixed with rice, curry powder, etc.

Mullein (mul'en), the common English name for the plant *Verbascum Thapsus*, nat. order Scrophulariaceæ. The common mullein grows in old fields, roadsides, etc., and is a tall, rough plant. The flowers are yellow, almost sessile, and are disposed in a long cylindrical spike.

Müller (mül'èr), Friedrich Max, a celebrated philologist, son of the German poet Wilhelm Müller, was born at Dessau in 1823; entered the University of Leipsig, where he studied Sanskrit under Brockhaus, and published (1844) the *Hitopadesa*, a collection of Sanskrit fables; proceeded then to Berlin, where he attended the lectures of Bopp and Schelling; continued his studies under Burnouf in Paris; went to England in 1846, and established himself at Oxford, where he was appointed successively Taylorian professor of modern languages (1854), assistant, and ultimately sublibrarian at the Bodleian library (1865), and professor of comparative philology (1868), a position which he (nominally) held to his death, though he practically resigned in 1875. He was a foreign member of the French Institute, and an LL.D. of Cambridge and Edinburgh. His numerous writings include an edition of the *Rig-Veda* (6 vols. 1849-74); *History of Sanskrit Literature* (1859); *Lectures on the Science of Language* (2 series, 1861 and 1864; many editions since); *Chips from a German Workshop* (4 vols. 1868-75); *On the Origin and Growth of Religion* (1878); *Selected Essays* (2 vols. 1882); *The Science of Thought* (1887); *Biographies of Words* (1888); *Natural Religion* (1889), and he was the editor of the series of *Sacred Books of the East*. He died in 1900.

Müller, Johann, a German physiologist, born at Coblenz in 1801; died in 1858. He studied medicine at Bonn, first becoming (1830) professor of physiology there, and then occupying the same position at Berlin from 1833 until his death. He was the author of *Elements of Physiology* (1837) and other works.

Müller, Karl Otfried, a German classical scholar, born in 1797; died at Athens in 1840. He studied at Breslau and Berlin; was appointed (1817) professor of ancient languages in the former city; obtained the chair of archæology at Göttingen in 1819; visited Italy, and then Greece, where he died. His best-known works are on the Dorians and the Etruscans, and his *History of the Literature of Ancient Greece* (1840).

Müller, Wilhelm, a German poet, born at Dessau in 1794; died in 1827. He studied at Berlin; volunteered in 1813 into the Prussian army, and was present at the battles of Lützen, Bautzen, Hanau and Culm; journeyed to Italy in 1819; and on his return was appointed teacher of Latin and Greek at Dessau. His chief poetical works are lyrical, and are very popular in Germany. He also published the *Library of the Seventeenth Century German Poets*. His son is the well-known Friedrich Max Müller. See above.

Müller, William James, landscape and figure painter, born in 1812 at Bristol, England, where his father, a German clergyman, was curator of the museum. He studied painting under J. B. Pyne, and first exhibited in the Royal Academy in 1833. In 1833-34 he visited Germany, Switzerland and Italy, and in 1838 Greece and Egypt; while in 1843 he accompanied, at his own expense, the Lycian expedition under Sir Charles Fellowes, bringing back many sketches and pictures of oriental life and scenery. He lived for some time in London, but returned to Bristol to die in 1845. His pictures, though not numerous, are of exceptional power and merit, among the more notable being the *Baggage Wagon*, *Dredging on the Medway* and *The Slave Market*, all exhibited in the Manchester collection of 1887, and the *Salmon-weir* at South Kensington.

Mullet (mul'et), a name common to two groups of acanthopterygian fishes, viz., the family Mugilidæ, or gray mullets; and the family Mullidæ, or red mullets. Naturalists, however, generally restrict the name to the former, designating the red mullets as sur-mullets. Of the true mullets the best-known is the common gray mullet (*Mugil capito*), found round the shores of the British islands, and in particular abundance in the Mediterranean. It grows to the length of 18 to 20 inches, and will sometimes weigh from 12 to 15 lbs. It has the habit of rooting in the mud or sand in search of food. Another species, also called gray mullet (*M. cephalus*), a native of the Mediterranean, is distinguished by having its eyes half covered by an adipose membrane. It weighs usually from 10 to 12 lbs., and is the

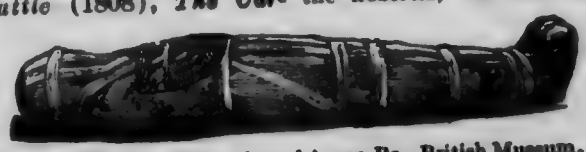
most delicate of all the mullets. A smaller species, the thick-lipped gray mullet (*Lisa chelo*) is common on the European coasts.

Mulligan Letters (mul'li-gan), a series of business letters, written by James G. Blaine to Warren Fisher of Boston, which fell into the hands of Fisher's bookkeeper, Mulligan. They played an important part in the political discussions of 1876 and 1884. It was alleged by Blaine's opponents that they confirmed charges of corruption brought against him in connection with certain railroads.

Mullion (mul'yun), a vertical division between the glass panes of windows, screens, etc., in Gothic architecture.

Mulock, DINAH MARIA. See *Craik*.

Mulready (mul'red-i), WILLIAM, was born at Ennis, Ireland, in 1786; died in 1863. He became a student of the Royal Academy about 1800; exhibited *The Rattle* (1808), *The Carpenter's Shop* (1809), at the Royal Academy, and his *Idle Boys* (1815) secured his election as an associate of the Academy, while the following year he was elected an academician. He produced many other popular pictures.



Mummy of Penamen, priest of Amun Ra.-British Museum.

Multan, or MOOLTAN' (möl'tän) a city of India, in the Punjab, the chief city and capital of a district of same name, is situated 4 miles from the Chenab, is partly surrounded by a wall. Pop. (1911) 99,243.

Multigraph (mul'ti-gräf), the trade name for a combined multiple typewriter, typesetter and rotary printing press, much used for the duplication of letters, etc., in large business establishments.

Multiple (mul'ti-pl), in arithmetic, a number which contains another an exact number of times without a remainder; as, 12 is a *multiple* of 3, the latter being a *submultiple* or aliquot part. A *common multiple* of two or more numbers contains each of them a certain number of times exactly; thus 24 is a common multiple of 3 and 4. The *least common multiple* is the smallest number that will do this; thus 12 is the least common multiple of 3 and 4. The same expression is used for algebraic quantities.

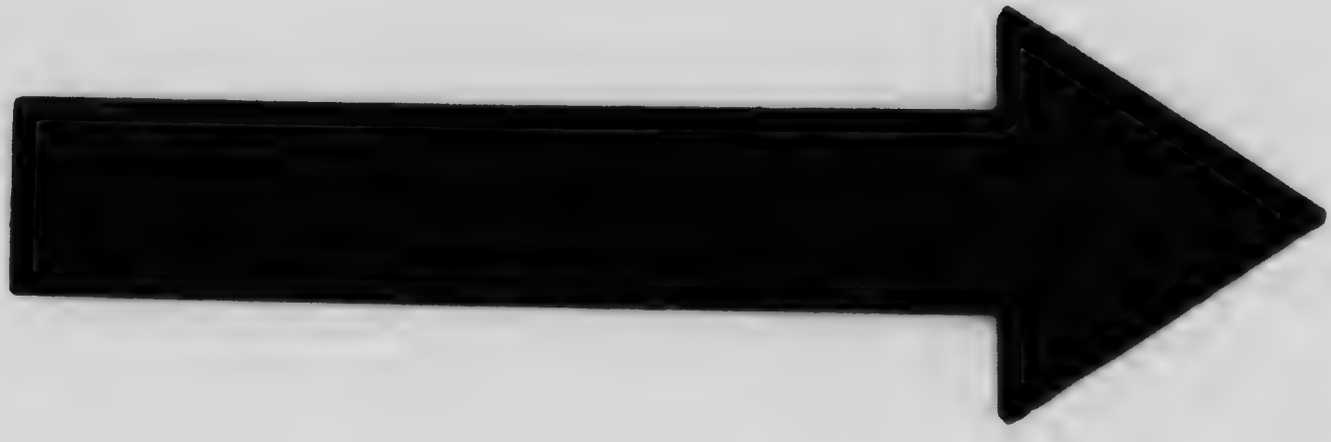
Multivalves (mul'ti-valvz), the name given to such shell-fish or molluscous animals as possess shells which consist of more than two pieces. See *Mollusca*.

Mum, a malt liquor which derives its name from Mumme, a German, who first brewed it. It is made of the malt of wheat, with the addition of a little oat and bean meal, is of dark-brown color and sweetish taste.

Mummies (mum'ez), dead human bodies embalmed and dried after the manner of those taken from Egyptian tombs. An immense number of mummies have been found in Egypt, consisting not only of human bodies, but of various animals, as bulls, apes, ibises, crocodiles, fish, etc. The processes for the preservation of the body were very various. Those of the poorer classes were merely dried by salt or natron, and wrapped up in coarse cloths and deposited in the catacombs. The bodies of the rich and the great underwent the most complicated operations, and were laboriously adorned with all kinds of ornaments. Embalmers of different ranks and duties extracted the brain through the nostrils, and the entrails through an incision in the side; the body was then shaved, washed, and salted, and after a certain period the process of embalming (see *Embalming*), properly speaking, began. The whole body was then steeped in balsam and wrapped up in linen bandages; each finger and toe was separately enveloped, or sometimes sheathed in a gold case, and the nails were often gilded. The bandages were then folded round each of the limbs, and finally round the whole body, to the number of fifteen to twenty thicknesses. The head was the object of particular attention; it was sometimes enveloped in several folds of fine muslin; the first was glued to the skin, and the others to the first; the whole was then coated with a fine plaster. The Persians, Assyrians, Hebrews and Romans had all processes of embalming, though not so lasting as that of Egypt. The art also was practiced by the Guanches of the Canaries, the Mexicans, Peruvians, etc. Natural mummies are frequently found preserved by the dryness of the air.

Mummy-wheat, a variety of wheat, the *Triticum turgidum compositum*, cultivated in Egypt, Abyssinia, and elsewhere; said falsely to be a variety produced from grains found in the case of an Egyptian mummy.

Mumps, a disease consisting in a peculiar and specific unsuppura-



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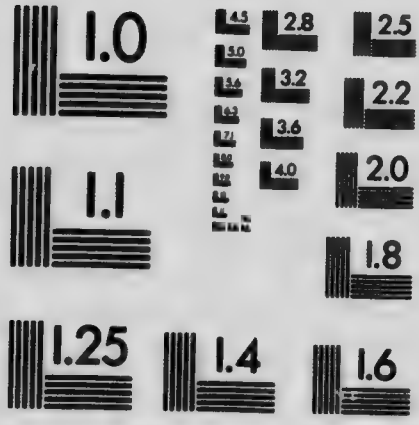

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tive inflammation of the salivary glands, accompanied by swelling along the neck, extending from beneath the ear to the chin. Children are more subject to it than adults.

München (mûnh'ĕn). See *Munich*.

Münchhausen (mûnh'hou-zn), KARL FRIEDRICH HIERONYMUS, BARON VON, a German officer, born in Hanover in 1720; died in 1797. He served in several campaigns against the Turks in the Russian service 1737-39. He was a passionate lover of horses and hounds of which, and of his adventures among the Turks, he told the most extravagant stories; and his imagination so completely got the better of his memory that he finally believed his fictions. *Baron Munchhausen's Narrative*, a small book of 48 pages, appeared in London in 1785. Two years after it was translated into German by Bürger, who naturally passed in Germany for the writer. The real author was Rudolf Erich Raspe (1737-94).

Muncie (mun'sē), a city of Indiana, county seat of Delaware County, on the White River, 54 miles N. E. of Indianapolis. It has manufactures of glass, iron, automobiles and automobile parts, machinery, bent wood, fruit jars, etc. It is the home of the Muncie Normal Institute and the seat of the International Hotel Training School. Pop. 34,834.

Munden (mûn'den), a town of Prussia, in Hanover, at the confluence of the Fulda and Werra, which here unite to form the Weser, 14 miles W. S. W. of Göttingen. Pop. 10,755.

Mungo (mun'gō), a material similar to shoddy, being made from old woolen fabrics torn up for remaking.

Mungo, ST., or KENTIGERN, the patron saint of Glasgow, an early apostle of the Christian faith in Britain, is said to have been the son of St. Theneu and a British prince, and was born at Culross about 514, and brought up by St. Serf, the head of a monastery there, whose favorite pupil he became. His name, Kentigern, was exchanged by the brethren of the monastery for *Mungo*, the beloved, on account of the affection they bore him. On leaving Culcross Kentigern founded a monastery on the banks of a small stream flowing into the Clyde, subsequently the site of Glasgow Cathedral. Having some troubles with the king of the Strathclyde Britons, he afterwards took refuge with St. David in Wales, and while in this country he founded a religious establishment under a follower named Asaph, which afterwards became the seat of the bishopric of St. Asaph. He returned to Glasgow, where he acquired a character of great sanctity, and died about 601. Numerous miracles were ascribed to him, and several legendary biographies are preserved.

Mungoose (mun'gōs; *Herpestes griseus*), a species of ichneumon, otherwise known as the 'gray' or 'Indian' ichneumon. Being easily domesticated it is kept in many houses in Hindustan to rid them of reptiles and other vermin, as rats, mice, etc. It has been said that it neutralizes the poison of snakes, which it fearlessly attacks, by eating, during its contests with them, the *Ophiorhiza Mungos*, or snake-root; but its immunity is really due to the extreme celerity of its movements. It is of a gray color flecked with black, and about the size of a rat.

Munhall, a borough of Allegheny County, Pennsylvania, on the Pennsylvania Railroad. Pop. 5185.

Munich (mû'nik; German, *München*), the capital of Bavaria. It lies on an extensive but uninteresting plateau, about 1700 feet above sea-level, chiefly on the left bank of the Isar. The old town has a quaint and irregular character, but the new town, which has sprung up chiefly to the north and west, has a regular and imposing appearance, and altogether Munich is one of the finest towns in Germany. Vast improvements are due to the munificence of King Ludwig I. The royal palace forms a very extensive series of buildings chiefly in the Italian style, and contains many magnificent apartments and rich artistic and other treasures. Connected with it are the court church and the court and national theater, among the largest in Germany. The city is highly celebrated for its fine galleries of sculpture (Glyptothek) and painting (Old and New Pinakothek), and for various other important collections, such as that of the Bavarian national museum. The royal library (occupying a fine building in the Florentine style) has upwards of 1,000,000 volumes and 30,000 MSS., being thus one of the largest in Europe. The university is attended by some 2500 students, and has a library of 300,000 volumes. There is an academy of science, an academy of arts, and many fine churches, including the cathedral, founded in 1488. In addition to the public edifices, properly so-called, Munich is rich in monuments, which adorn its squares, gardens, and public promenades. The so-called English Garden (laid out by Count Rumford) is a fine park of 600 acres watered by two arms of the Isar. The industries are numerous, and in some

particular branches have acquired a high name. Among others may be mentioned painted glass and other artistic productions, mathematical, optical and surgical instruments, gold and silver lace, jewelry, glass, carriages, bells, musical instruments, etc. Munich is the seat of the high courts of legislature and of law, and of all the more important offices of the State. It was founded by Henry, duke of Saxony, in 962; taken by Gustavus Adolphus in 1632, by the French under Moreau in 1800, and by Napoleon in 1806. Pop. (1915) 630,000.

Municipality (mū-ni-si-pal'i-ti), a town or city possessed of certain privileges of local self-government, derived from incorporating charters granted by the State. Or the term may be applied to the corporation or body of persons in a town having the powers of managing its affairs. See *Borough, Burgh, Corporation, Election*, etc.

Municipal Government. The cities of the United States have hitherto been under political control, their governing officials and legislative bodies being largely made up of partisans of the great parties, and much corruption prevailing. Recently a new system, known as commission government, has been adopted in many cities, in which the power is lodged in the hands of a few officials, pledged to employ strict business methods, and subject to recall and dismissal if not satisfactory to the people. This somewhat assimilates the government of American cities to the methods pursued in many European cities.

Municipal League, an association for the reform or improvement of city government. Good government clubs, committees of citizens, etc., have been formed from time to time in American cities for this purpose. In Philadelphia the society for this purpose took the name of Municipal League, and in 1894, at a reform convention in that city, a National Municipal League was organized, which since then has held annual sessions in different cities, and has issued reports of interest and value in the education of civic voters in the subject of municipal reform.

Municipal Ownership, the ownership of public utilities in cities by the municipality. The movement in this direction has made considerable progress in Britain and some other parts of Europe, many cities there owning their chief utilities, including the street railways, and managing them in the interest of the citizens. This movement has made less progress in the United States, in which the cities have little ownership of or control over their street railways, the chief utilities held by any of them being the water and gas supply. But a somewhat active movement in the direction of fuller public control is in progress.

Munjeet (mun'jēt), or East Indian madder, a dye-stuff closely allied to the common madder, and used for producing similar colors, obtained from the roots of *Rubia cordifolia*, a plant grown very extensively in several parts of India.

Munkacs (mŭn'kăch), a town of Hungary, on the Latorcza, 80 miles N. E. of Debreczin. In the vicinity are mines of rock-crystal. Pop. 13,640.

Munkacsy (mŏn-kä'chē), MIHALY, real name *Michael Liel*, a Hungarian genre and historical painter, born at Munkacs in 1846; studied at Gyula, Vienna, Munich, and Dusseldorf, and settled in Paris in 1872. Among his best-known pictures are *Last Day of a Condemned Man, Milton Dictating Paradise Lost, Christ Before Pilate* and *The Crucifixion*. He died in 1900.

Munster (mun'stir), the southwest province of Ireland, comprising the six counties of Clare, Cork, Kerry, Limerick, Tipperary and Waterford. Area, 9475 square miles. Pop. 1,075,095.

Münster (mŭn'stĕr), a town of Prussia, capital of the province of Westphalia, in a wide plain on the Aa, 78 miles N. N. E. of Cologne. It was once fortified, but the fortifications have been converted into promenades. The principal edifices are the cathedral, the church of St. Lambert, the town-house, the exchange, museum, theater, etc. The manufactures include woolen, linen, and cotton goods, etc. Münster was long governed by independent bishops, in whom a warlike was often much more conspicuous than a Christian spirit. The most memorable event in the history of the town occurred in 1532-35, when it fell into the hands of the fanatical Anabaptists. (See *Anabaptists*.) Pop. (1910) 90,254.

Münster, PEACE OF. See *Westphalia, Peace of*.

Muntjac (munt'jăk), a small species of deer, the *Cervulus muntjac*, found in British India, the Malay Peninsula, Sumatra, Java and Borneo, about 26 inches high at the shoulder. They are of solitary habits; the male has short horns, and they use their teeth effectually in self-defense.

Muntz's Metal (from its inventor, a Mr. Muntz of Birmingham), an alloy of 60 parts copper

and 40 parts zinc, used for sheathing ships and for other purposes.

Münzer (mûnt'sĕr), THOMAS, a German fanatic, born about 1490; executed in 1525. He is said to have studied at Wittenberg. He preached at Zwickau in 1520, and at Prague in 1521, and he was connected with the early movements of the Anabaptists. He held a mystical belief in continuous divine revelation through dreams and visions, and promulgated the doctrine of community of goods. He collected a large number of peasant followers, who committed many outrages, but in 1525 Münzer was taken and executed.

Murad V (mö'rad), Sultan of Turkey, born in 1840. Son of Abdul-Medji, he succeeded to the throne on the forcible deposition of Abdul Asis in 1876, but was deposed in the course of the same year on account of insanity, and was succeeded by his younger brother, Abdul Hamid. He died in 1904.

Muræna (mûrē'na), a large eel, type of the family Murænidæ. It has no pectoral fins, and the dorsal and anal fins are very low and are united. The muræna of the ancients was *M. helena*. Most species are predaceous and are armed with strong pointed teeth.

Mural Decoration, the art of decorating walls, either by painted surfaces or by spaces carved in relief. As early as 4000 or 5000 B.C., in ancient Egypt mural paintings were carried to a high pitch of merit.

Mural Painting in the United States. The native school may be said to have begun with the decoration (1876–77) of Trinity Church, Boston, by John La-Farge. This was followed by the decoration of the State Capitol in Albany, N. Y., executed in 1878 by William Morris Hunt, unfortunately since destroyed. The next important achievement was the decoration of the Boston Public Library by John Sargent, Puvis de Chavannes and Edwin A. Abbey. Later works of note are the decoration of the Baltimore Court House by E. H. Blashfield, C. Y. Turner and John La Farge; of the Pennsylvania State Capitol by Violet Oakley, Edwin A. Abbey and John W. Alexander; of the Iowa Capitol by Kenyon Cox; of the Carnegie Institute at Pittsburgh by John W. Alexander; of the Congressional Library at Washington, D. C., by a number of artists, and of the Minnesota State Capitol by La Farge, Blashfield, Cox, F. D. Millet and Edward Simmons.

Murat (mû-rä), JOACHIM, a French marshal, born in 1771; died in 1815. He entered the French army in 1791 and rose to the rank of lieutenant-colonel; was afterwards removed as a terrorist, and remained without employment till his fate placed him in connection with Bonaparte, whom he followed to Italy and Egypt, becoming general of division in 1799. In 1800 he married Caroline, the youngest sister of Bonaparte. He was present at the battle of Marengo, and in 1804 was made marshal of the empire, grand-admiral, and prince of the imperial house. His services in the campaign of 1805 against Austria, in which he entered Vienna at the head of the army, were rewarded in 1806 with the grand-duchy of Cleves and Berg. In the war of 1806 with Prussia, and of 1807 with Russia, he commanded the cavalry, and in 1808 he commanded the French army which occupied Madrid. He anticipated receiving the crown of Spain, Charles IV having invested him with royal authority; but Napoleon, who destined Spain for his brother Joseph, placed him on the throne of Naples, July 15, 1808. He shared the reverses of the Russian campaign of 1812, and in 1813 again fought for Napoleon, whose cause he deserted after the battle of Leipzig. He took up arms again in 1815 for Napoleon; but being defeated by Generals Neipperg and Bianchi near Tolentino, May 2 and 3, he was forced to leave Italy, and took refuge in Toulon. After the overthrow of Napoleon he escaped to Corsica, and set sail for the Neapolitan territory with a view to recover his kingdom. He landed at Pizzo on October 8, but was immediately captured, tried by a court-martial, and shot.

Muratori (mö-ra-tö'rē), LUDOVICO ANTONIO, an Italian historian, born in 1672; died in 1750. He was successively librarian at Milan and ducal archivist and librarian at Modena. He made many valuable contributions to Italian history, notably *Rerum Italicarum Scriptores ab Anno 500 ad 1500* (twenty-seven vols., folio, 1723-51), *Antiquitates Italicæ Medii Ævi* (six vols., 1738-42), *Annali d'Italia*, etc.

Murchison (mur'chi-sun), SIR RODERICK IMPEY, a Scottish geologist, born at Tarradale, in Ross-shire, in 1792; died in 1871. He studied at the military college, Great Marlow, and at Edinburgh University; joined the army and served in the Peninsular war (1807-08). After the peace of 1815 he retired from the army and devoted himself to scientific pursuits, particularly geology, spending many years in the investigation of various parts of England, Scotland, and the Continent. In 1831-32, and again in 1842-43, he was elected president of the Geological Society. By a comparison of specimens of the rocks of Australia with

the auriferous rocks of the Ural Mountains, which he had personally examined, he was led, so early as 1845, to predict that gold would be found there. He was one of the founders and most active members of the British Association for the Advancement of Science, and he presided over the meeting of that association at Southampton in 1846. In 1855 he was appointed director of the Geological Survey and of the Royal School of Mines. He was several times elected president of the Royal Geographical Society; after 1862 he was by general consent always reëlected, and he remained president of that society till within a few months of his death. He was made a baronet in 1863. His chief works are *Siluria*, *The Geology of Russia*, and numerous contributions to the transactions of the learned societies. He endowed the chair of geology in Edinburgh University.

Murcia (mur'thi-à), a city of Southern Spain, capital of the ancient kingdom and modern province of same name. The city is walled, and the streets are generally broad, straight, and well paved. Among the public buildings the most important is the cathedral, whose principal façade, a combination of Corinthian and Composite architecture, produces a fine effect. It was begun in 1353. The episcopal palace is one of the finest in Spain. There are manufactures of woolens, silk stuffs, linens, etc. Pop. 124,985.—The province formed part of the ancient kingdom of Murcia; area 4453 square miles; pop. 577,987. A considerable portion is composed of ranges of hills, containing mines of copper, iron, lead, and silver, and quarries of marble. There are also extensive plains, which are rendered amazingly fruitful by irrigation. The ancient kingdom, after passing through the hands of the Romans and Goths, was conquered by the Moors in 713, and continued under them till 1240, when it became a dependency of Spain.

Murder (mur'dêr), the act of unlawfully killing a human being with premeditated malice, the person committing the act being of sound mind and discretion, and the victim dying within a year and a day after the cause of death administered. In Britain it is the law that every person convicted of murder shall suffer death as a felon. In the United States the law recognizes degrees in murder, and in France and some other civilised nations 'extenuating circumstances' are taken into consideration.

Murdoch (mur'dok), JAMES EDWARD, actor, was born at Philadelphia in 1811 and made his first stage appearance in that city in 1826. He was versatile and played many leading parts, being for years a favorite comedian. He made his first appearance in tragedy in *Hamlet*, in 1845. During the Civil war he gave readings for the benefit of the Sanitary Commission. He was the author of several text-books on elocution. He died in 1892.

Murdoch (mur'dok), WILLIAM, an inventor, born near Auchinleck, Ayrshire, in 1754. His father was a millwright and miller, and under him William worked till he was twenty-three years of age. He then went to Birmingham, where he obtained employment in the engineering establishment of Boulton & Watt. A demand for Watt's engines was fast rising in the Cornish mines, and Murdoch was soon sent thither to superintend the erection and fittings of these. At Redruth, in 1784, he constructed a model high-pressure engine to run on wheels, the precursor of the modern steam locomotive; a year later he invented the oscillating engine, the system of which is still in use; and the rotary engine with sun-and-planet circular motion is also his invention. He made many improvements on Watt's engine on the lines of economising steam and simplifying simplicity. About the end of the century he was made manager of the works of Boulton & Watt, being afterwards admitted as a partner. In 1803 he constructed a steam-gun; and some time later produced the well-known cast-iron cement made of iron-borings and sal-ammoniac. In 1815 he introduced the hot-water apparatus which, with certain slight modifications, is now so extensively used for heating large buildings and conservatories. Various other inventions of his might be mentioned; but his work as a gas inventor remains his most conspicuous achievement. In 1792 he first lighted his offices and cottage at Redruth with coal gas but it was not till 1798 that he constructed his first extensive apparatus at Birmingham for the making, storing, and purifying of gas, with a view to the supply of factories. Not long after this the offices at Soho were lighted with gas, and the new illuminant was brought prominently before public notice in 1802, when the exterior of the factory was lighted up in celebration of the Peace of Amiens. His great invention was never patented. He retired from business in 1830, and died in 1839.

Mure (mür), WILLIAM, historian, son of William Mure, of Caldwell, an estate on the borders of Renfrewshire and Ayrshire, was born at Caldwell, Renfrewshire, in 1799; died in 1860. He was educated at Westminster School, the Uni-

versity of Edinburgh, and the University of Bonn. In 1824 and 1825 he contributed to the *Edinburgh Review* articles on Spanish literature and other subjects. In 1829 he published *Brief Remarks on the Chronology of the Egyptian Dynasties;* in 1832 *A Dissertation on the Calendar of the Zodiac of Ancient Egypt;* in 1842 *Journal of a Tour in Greece and the Ionian Islands.* In 1846 he was elected member of parliament for Renfrewshire, for which county he continued to sit till 1855, when he resigned in consequence of ill health. In the winter of 1847-48 he was elected lord-rector of the University of Glasgow. His leading work, which was left unfinished at his death, *A Critical History of the Language and Literature of Ancient Greece,* was published in five volumes (1850-57).

Murex (mū'reks), a genus of gasteropod molluscs resembling the whelk; shell spiral, rough, with three or more ranges of spines simple or branched. Murices are remarkable for the beauty and variety of their spines. They were in high esteem from the earliest ages on account of the purple dye that some of them yielded.

Murfree (mur'frē), MARY NOAILLES, novelist, born in Murfreesboro, Tennessee, in 1856. She wrote under the pseudonym of Charles Egbert Craddock, her subjects having largely to do with the mountaineers of East Tennessee.

Murfreesboro (mur'frēz-bo-ro), a city of Tennessee, capital of Rutherford County, 30 miles S. E. of Nashville. It has flour and planing mills, tanneries, canneries, and cotton-gin works. It was the capital of Tennessee from 1819 to 1826, and nearby was fought one of the great battles of the Civil war (also called Battle of Stone River), December 31, 1862, to January 2, 1863, between the Federals under General Rosecrans and the Confederates under General Bragg. Pop. 6150.

Murger (mür-zhär), HENRI, born at Paris in 1822; died in 1861. He lived a life of extreme privation; formed an informal club or society of unconventional young artists and authors similarly situated which was named 'Bohemia,' and the associates 'Bohemians'—a name famous in general literary history. He contributed a great mass of 'copy' to numerous periodicals, and at last made a reputation by his *Scènes de la Vie de Bohême.* He also published two volumes of poetry, *Ballades et Fantaisies,* and *Les Nuits d'Hiver;* and wrote dramas for the Luxembourg theater, and tales, etc., for the *Revue des Deux Mondes.*

Murghab (mör-gäb'), a river of Asia, which rises in the mountains of Northern Afghanistan, and after a course of 400 miles loses itself in the sands surrounding the oasis of Merv.

Muriatic Acid (mū-ri-at'ik), the older name for hydrochloric acid (which see).

Muridæ (mū'ri-dē), the family of animals which includes the mice and rats.

Murillo (m ŋ' r ē l' y ō), BARTOLOMEO ESTEBAN, the greatest of Spanish painters, was born at Seville in 1618. He received his first instruction in art from his relation, Juan del Castillo. In 1642 he visited Madrid, and was aided by Velasquez, then painter to the king, who procured him permission to copy in the Royal Galleries. Murillo returned to Seville in 1645, where he commenced that great series of works which have now made his name so glorious. He married a lady of fortune in 1648, which much aided his personal influence, and he succeeded in establishing an academy of the arts at Seville in 1660, and acted as president the first year. He died at Seville in

Murillo.

1682, in consequence of a fall from a scaffolding at Cadiz, where he was engaged in the church of the Capuchins, painting a large altar-piece of St. Catherine. In his early career he painted many pictures of humble life with much charm of grace and humor; but his most celebrated pictures are of a later period, and treat religious subjects with a mingled idealism and realism and a richness of coloring which has seldom been attained. Soon after his marriage he gave up his early cold (*frio*) style, and adopted his warm (*calido*) style. He obtained the

name of 'Painter of the Conception' from his fondness for the subject of the Immaculate Conception. About 250 of his pictures are preserved in British and foreign galleries, and in Spanish churches.

Murom (mö'rom), a town in Russia, in the government of Vladimir, 75 miles southeast of the town of Vladimir, on the left bank of the Oka, one of the oldest towns in Russia. Pop. 12,874.

Murphy, CHARLES FRANCIS, American politician, born in New York in 1858. He early interested himself in politics, and in 1891 became the Tammany Hall leader of his assembly district. He was a commissioner of docks and ferries, New York (1897–1901), and in 1902 was elected chief of Tammany.

Murphysboro (mur'fēs-bo-ro), a city, county seat of Jackson Co., Illinois, on the Big Muddy River, 62 miles (by rail) N. of Cairo. Coal and shale are mined near this place, and it has foundries, machine shops, brick plant, brewery, etc. Pop. 10,237.

Murrain (mur'in), a name given in general to any widely prevailing and contagious disease among cattle, though in different localities it is given to some specific disease.

Murray (mur'ri), the largest river in Australia, rises in the Australian Alps about 36° 40′ S. and 147° E., its sources being partly in New South Wales, partly in Victoria; flows for a long distance westward, forming the boundary between the two colonies; then passes into South Australia, where it takes a southern direction, and falls into the sea through a large shallow sheet of water called Lake Alexandrina. There is a sand bar at the mouth which impedes navigation, but small steamers ascend the river as high as Albury, 1700 miles from its mouth. Its chief tributaries are the Murrumbidgee, the Darling and the Lachlan. The Darling before its junction with the Murray may even be considered the main stream.

Murray, DAVID CHRISTIE, novelist, born in 1847; commenced life on the Birmingham press, was connected with London newspapers, and acted as special correspondent during the Russo-Turkish war. He then took to fiction, and wrote a number of popular novels, among them *Aunt Rachel*, *The Weaker Vessel*, *The Way of the World*, *The Making of a Novelist*, *The Bishop's Amazement*, etc. He died in 1907.

Murray, EARL OF. See *Moray*.

Murray, JOHN, an eminent London publisher, born in 1778 (father's name MacMurray); died in 1843. He began business when quite young, early attained success, and became the friend of as well as publisher for some of the chief writers of the day, including Byron, Moore, Rogers, Campbell, Crabbe, Washington Irving, etc. He started the *Quarterly Review* in 1809. The well-known *Handbooks for Travelers* were originated by his son.

Murray, LINDLEY, grammarian, born in Pennsylvania, of Quaker parents, in 1745; died in 1826. About the age of twenty-one he was called to the bar, and acquired an extensive practise. On the outbreak of the Revolutionary war he retired to the country, but four years after engaged in mercantile pursuits, and by the close of the war had realized a competence. In 1784 he went to England, and purchased the estate of Holdgate, near York, where he passed the remainder of his life. He wrote, besides his well-known *English Grammar*, several works on education and morals.

Murrine (mur'ēn; or MURRHINE) Vases of (*vasa murrhina*), splendid antique vessels which were equally distinguished for the costliness of their material and the beauty of their execution. They were brought, according to Pliny, from Carmania, now Kerman in Persia, and bore an immense price. Vases of this ware were used in Rome as wine cups, and were believed to have the quality of breaking if poison were mixed with the liquor they contained. There is doubt about the material of these vases, though the probability is they were made of fluorspar or of the fluoride of calcium.

Murrumbidgee (mur-um-bid'jē), a large river of Australia, in New South Wales, rising in the great Dividing Range, and entering the Murray after a westward course about 1300 miles; chief tributary, the Lachlan.

Murshidabad, (mör-shed-ä-bäd), a or MOORSHEDABAD city of India, Bengal, capital of a district of same name, on the left bank of the Bhagirathi. It was the capital of Bengal till 1772, since which time its historical importance has departed. The city, with its suburb Azimganj on the opposite bank of the river, is the chief center of trade and manufacture in the district. The industries include an extensive silk industry, the embroidery of fancy articles with gold and silver lace, ivory carving, and the making of musical instruments. Its population in 1825 was still about 150,000. In 1901 it had fallen to 15,168. Azimganj had 13,883.

Murten. See *Morat.*

Murzuk. See *Mourzouk.*

Musaceæ (mū-zā'se-ē), a nat. order of endogenous plants, of which *Musa* is the typical genus. It includes the abaca or manila hemp, the banana and the plantain.

Museus (mū-sē'us), an ancient Greek poet, almost fabulous, said by some to be the son of Eumolpus and Selene, by others, of Linus or Orpheus. He is credited with the mystic and oracular verses of the Eleusinian and other mysteries. The ancients attribute to him many works, of which some verses only have come down to us as quotations in Pausanias, Plato, Aristotle, etc. A later Museus, who probably lived four or five centuries after Christ, is the author of an erotic poem of the loves of Hero and Leander.

Musäus (mu-zā'us), JOHANN KARL AUGUST, German author, born in 1735; died in 1787. He studied theology; was master of the pages at the Weimar court, and in 1770 was appointed professor in the gymnasium at Weimar. Among his writings, which are characterized by humor, simplicity, and a kindly satire, are *Der Deutsche Grandison* ('The German Grandison'), *Physiognomische Reisen* ('Physiognomic Travels'), *Volksmärchen der Deutschen*, ('German Popular Tales'), and a series of tales under the title *Straussfedern* ('Ostrich-feathers').

Musca (mus'ka), a Linnæan genus of dipterous insects, including the flies; now expanded into a family (Muscidæ).

Muscæ Volitantes (mus'se vol-i-tan'tēz; lit. 'floating flies'), in physiology, the name given to ocular spectra which appear like motes or small bodies floating before the eyes. One class of these specks are a common precursor of amaurosis (which see); but another class are quite harmless.

Muscardine (mus-kär'dēn), a contagious disease in silkworms caused by a fungus.

Muscat (mus'kat), or MASKAT, the chief city of the sultanate of Omân, or Muscat, a seaport on the Indian Ocean, near the east angle of Arabia. The town stands in a hollow, under cliffs 400 feet or 500 feet high. Large buildings are few, and the sultan's palace (a plain edifice), the governor's house, and a few minarets alone rise above the humble mass of flat-roofed huts or houses. The streets are extremely narrow, and the town is one of the hottest places in the world. It is an important center of trade, exporting coffee, pearls, mother-of-pearl, dye-stuffs, drugs, etc., and importing rice, sugar, piece goods, etc. Pop. of town and suburbs estimated at 60,000.

Muscatel (mus-kā-tel'), or MUSCADEL, a term for various sweet, strong, and fragrant wines.

Muscatine (mus-kā-tēn'), a city of Iowa, on the Mississippi, at the apex of what is called the Great Bend, 30 miles below Davenport, and in connection with an extensive network of railways. It has varied and important industries, including large saw and planing mills and many others. Melons, sweet potatoes and garden produce are raised in the vicinity and shipped widely over the West. Pop. 16,178.

Muschelkalk (mush'el-kälk), a compact hard limestone of a grayish color found in Germany. It is interposed between the Bunter sandstone, on which it rests, and the Keuper variegated marls, which lie over it, and with which at the junction it alternates, thus forming the middle member of the Triassic system as it occurs in Germany. In England the Keuper rests immediately on the Bunter. It abounds in marine organic remains, its chief fossils being encrinites, ammonites and terebratulæ.

Musci. See *Moss.*

Muscidæ (mus'si-dē), a family of two-winged flies, of which the common house-fly (*Musca domestica*) is a familiar example.

Muscle and Muscular Motion

(mus'l). The name *muscle* is applied to those structural elements or organs in animals which are devoted to the production of movements, either of a part of the body, or of the body as a whole. They consist of fibers or bundles of fibers, susceptible of contraction and relaxation, en-

A Striped Muscular Fiber with its Sheath.

closed in a thin cellular membrane. Muscles are composed of fleshy and tendinous fibers, occasionally intermixed, but the tendinous fibers generally prevail at the extremities of the muscle, and the fleshy ones in the belly or middle part of it. When the fibers of a muscle are placed parallel to each other it is called a *simple*

or *rectilinear* muscle; when they intersect and cross each other they are called *compound*. When muscles act in opposition to each other they are termed *antagonist;* when they concur in the same action they are called *congenerous*. Muscles are also divided into *voluntary* and *involuntary* muscles, the former being those whose movements proceed from an immediate exertion of the will, as in raising or depressing the arm, bending the knee, moving the tongue, etc., while the latter are beyond this control, being the agents in the contraction of the heart, arteries, veins, absorbents, stomach, intestines, etc. When examined under the microscope the fibers of the voluntary muscles (as also those of the heart) are seen to be marked by minute transverse bars or stripes, while those of the involuntary are smooth and regular in appearance. The former is therefore called *striped* or *striated* muscle, the latter *unstriped*, *nonstriated*, or *smooth* muscle. The great property of muscular tissue is the power of re-

Muscular Fiber separated—A into fibrillæ and B into discs. C is a highly magnified portion of a fibril.

sponding when irritated. The response is in the form of contraction, that is, when the muscle is irritated or stimulated it responds by shortening itself, so that its ends are brought nearer and it becomes thicker in the middle, its inherent elasticity making it capable of returning to its previous length when the stimulation is withdrawn. By these contractions the muscles are able to do work. The usual stimulation is by nervous action (see *Nerve*), but mechanical means, such as pinching, pricking, etc., electricity, heat and chemicals also cause irritation. All the muscles are connected with bones not directly but through the medium of tendons. A tendon presents the appearance of a white glistening cord, sometimes flat, but often cylindrical and of considerable thickness. The mass of flesh composing the muscle is called the *belly* of the muscle. One end is usually attached to a bone more or less fixed, and is called the *origin* of the muscle. The other end is attached to the bone meant to be moved by the contraction of the muscle, and is called the *insertion* of the muscle. Involuntary muscle consists of spindle-shaped cells having an elongated nucleus in the center. They are united in ribbon-shaped bands, and respond much less rapidly than the voluntary to irritations, and the wave of contraction passes over them more slowly.

Muscogees (mus-kō'jēz), the Creek Indians. See *Creeks*.

Muscovado (m u s - k o - vä'dō), unrefined sugar; the raw material from which loaf and lump sugar are procured by refining. Muscovado is obtained from the juice of the sugar-cane by evaporation and draining off the liquid part called *molasses*.

Mus'covy (from *Moscow*), a name often applied to Russia.

Muscovy Duck. See *Musk-duck*.

Muses (mūs'ez), in the Greek mythology, the daughters of Zeus and Mnemosynē, who were, according to the earliest writers, the inspiring goddesses of song, and according to later ideas divinities presiding over the different kinds of poetry, and over the sciences and arts. Their original number appears to have been three, but afterwards they are always spoken of as nine in number, viz.—*Clio*, the muse of history; *Euterpē*, the muse of lyric poetry; *Thalia*, the muse of comedy, and of merry or idyllic poetry; *Melpomēne*, the muse of tragedy; *Terpsichōrē*, the muse of choral dance and song; *Erāto*, the muse of erotic poetry and mimicry; *Polymnia* or *Polyhymnia*, the muse of the sublime hymn; *Urania*, the muse of astronomy; and *Calliōpe*, the muse of epic poetry.

Museum (mū-zē'um), a building or apartments used as a depository of articles which relate to art, science, or other fields of human interest, and where the contents are arranged for inspection. Collections of this kind are numerous in all civilized parts of the world, usually open to the public for instruction or recreation. Of these Britain has an admirable example, the most famous in the world, in the British Museum, and a second of much repute is the South Kensington Museum. Others of leading importance in Europe are the museums of the Vatican in Rome, of the Louvre in Paris, and those of St. Petersburg, Berlin, Vienna, Dresden, Munich and other cities. In the United States the National Museum at Washington is a richly-filled institution. Others of importance are the Peabody Museum at Harvard, the American Museum of Natural History at New York, the Peabody

Museum at Yale College, the museum of the Academy of Natural Sciences and the Commercial Museums at Philadelphia, the museums of the Boston Society of Natural History, the Field Museum at Chicago, and others elsewhere. Collections of art and other objects are equally numerous, though not usually known as museums. The Metropolitan Museum of New York is of this sort.

Mushroom (mush'rōm), the common name of numerous cryptogamic plants of the nat. order Fungi. Some of them are edible, others poisonous. The species of mushroom usually cultivated is the *Agaricus campestris*, or eatable agaric, well known for its excellence as an ingredient in sauces, especially ketchup. (See *Agaric.*) Mushrooms are found in all parts of the world, and are usually of very rapid growth. In some cases they form a staple article of food. In Terra del Fuego the natives live almost entirely on a mushroom, *Cyttaria Darwinii;* in Australia many species of *Bolētus* are used by the natives, and the *Mylitta austrālis* is commonly called native bread. *Mushroom spawn* is a term applied to the reproductive mycelium of the mushroom.

Music (mū'zik), any succession of sounds so modulated as to please the ear; also the art of producing such melodious and harmonious sounds, and the science which treats of their properties, dependencies and relations. Sound is conveyed through elastic media, as the atmosphere or water, by undulations, which may be generated in the medium itself, as by a flute or organ pipe, or transmitted to it by the vibrations of violin or pianoforte strings or the reeds of a wind instrument. When the vibrations are fewer than 16 in a second or more than 8192 the sound ceases to have a musical character. The *pitch* or relative height of a tone is determined by the number of vibrations in a given time, the lower numbers giving the grave or deep tones, the higher numbers the acute or shrill tones. The loudness of a tone is determined by the largeness of the vibrations, not their number. The note or musical sound called middle C on the pianoforte is usually assumed by theorists to be produced by 512 vibrations per second, and this was long the pitch recognised in practice as the standard or *concert pitch* useful for the guidance of all musicians. The perpetual striving after increased brilliance of tone led, however, to a gradual heightening of the pitch, and in the course of a century the middle C in France had become 522 vibrations, while in England and Germany it was somewhat higher. Of late years there has been a movement among European musicians to lower the pitch to about the French standard, and this lower pitch has been now adopted by many foreign nations.

A note produced by double the number of vibrations required to produce any given note will be found to be in a perfect *unison* with it though higher in pitch. Between two such notes there is a gradation by seven intervals in the pitch of tone, more agreeable (at least to modern European ears) than any other, the whole forming a complete scale of music called the *diatonic scale.* The space between the notes sounding in unison is termed an *octave*, and the note completing the octave may become the *keynote* of a similar succession of seven notes, each an octave higher or double the pitch of the corresponding note in the first scale. These seven notes of the diatonic scale are designated by the first seven letters of the alphabet, and each note bears a fixed ratio to the keynote in respect of pitch as determined by the number of vibrations. Thus in the case of a keynote obtained from a vibrating string, its octave is produced by halving the string, which vibrates twice as fast in a given time as the whole string, and the other notes may be obtained by applying reciprocally the ratios given below to the length of the string.

Taking C or Do for our fundamental note we have for our scale—

C	D	E	F	G	A	B	C	D	E	F	G	A	B	C,	etc.	(Scale in key of C major)
or Do	Re	Mi	Fa	Sol	La	Si	Do	Re	Mi	Fa	Sol	La	Si	Do,	etc.	
1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	2									(Ratio to keynote).

The scale may be extended up or down so long as the sounds continue to be musical. In order to allow reference to be made to the various degrees of scales without reference to the key in which they are pitched the tones composing the octave are known in their ascending order as (1) *tonic* or keynote, (2) *supertonic*, (3) *mediant*, (4) *subdominant*, (5) *dominant*, (6) *superdominant* or *submediant*, (7) *leading note* or *subtonic*, (8) *final note*. The tonic, the subdominant, and the dominant are the governing or emphatic notes of the scales. In the diatonic scale the various notes proceed from the keynote by five *tones* and two *semitones;* the semitones (the smallest intervals recognized in musical notation)

occurring between the 3d and 4th and 7th and 8th notes in the scale. The first four and last four notes, therefore, form a natural division of the octave into two 'tetrachords,' each consisting of two tones and a semitone.

Every sound employed in the art of music is represented by characters called notes on a *staff*—that is, five equidistant horizontal lines on or between which the notes are placed. A note represents a higher or a lower sound according as it is placed higher or lower on the staff. When any note is higher or lower in pitch than can be placed upon the staff short lines called *ledger lines* are added above or below the staff to indicate the relation of the note to those on the staff. As, however, the multiplication of ledger lines is liable to become embarrassing to the eye, musicians have endeavored to overcome the difficulty by the use of more than one staff. The staves are the *bass*, *mean*, and the *treble*, but the second is now seldom used. The treble staff, which contains the upper notes, is distinguished by a character called a G or treble *clef* the bass by a character called the F or bass clef and the mean by a character called the C or mean clef.

The treble and bass clefs only are required for keyed instruments of the pianoforte kind, and when a staff is wanted for each hand they are joined by a brace, the upper staff carrying the notes generally played by the right hand and the lower those played generally by the left, as follows:—

major musical progression. The sharp (♯) placed before a note raises the pitch by a semitone, the flat (♭) lowers it by a semitone. A sharp or flat placed at the beginning of a staff affects every note upon the line which it dominates, unless the contrary be indicated by the sign of the *natural* (♮), which restores the note to which it is attached to its normal pitch. In the model diatonic scale given it has been pointed out that there is an interval of a tone between every note, except the 3d and 4th (E and F) and 7th and 8th (B and C), when the interval consists of a semitone. Now if we wish to make G the keynote it is clear that without some contrivance the notation of the scale from G to its octave would throw one of the semitones out of its place—namely, that between E and F, which, instead of being, as it ought to be, between the seventh and eighth, is between the sixth and seventh. It is obvious then that if we raise the F a semitone we shall restore the interval of the semitone to a position similar to that which it held in the key of C. If D be taken as a keynote we shall find it necessary to sharpen the C as well as the F in order to bring the semitones into their proper places. Still proceeding by fifths, and taking A as a keynote, a third sharp is wanted to raise G. We may proceed thus till we reach the scale of C sharp, with seven sharps, which is, however, rarely used. This series of scales with sharps is obtained by taking the dominant, first of the model scale as the keynote and then of the others in succession, and sharpening the fourth of the original scales to make it the seventh of the new.

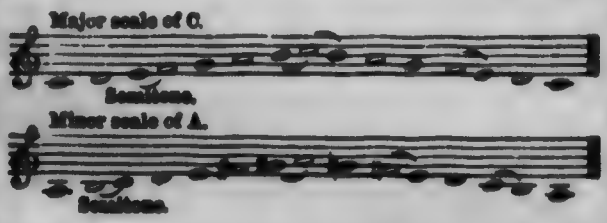
It will be seen that the steps in every diatonic scale must correspond to those of the scale of C, in that the notes composing it stand in the same fixed ratio to the keynote of the scale. In selecting another keynote than C, however, it is necessary to modify some of the natural notes by the insertion of what are called *sharps* or *flats* in order to preserve the required relation and sequence of the intervals (the tones and semitones in their due relative positions) and so produce the

Another series is obtained by taking the subdominant of the model scale as the keynote and lowering its seventh a semitone, making it the fourth of the new scale, or scale of F. Taking the subdominant of the scale (B) as the keynote we require to flatten the E in addition to the B, and so on until we have lowered all the tones in the scale a semitone.

Besides the forms of the diatonic scale, which have an interval of two tones be-

tween the tonic and the third, and is called the *major scale*, there are *minor scales* of which the most important kind has an interval of a tone and semitone between its tonic and third, the seventh note being sharpened so as to form a leading note. In the ascending scale, too, the harsh interval of the second between this leading note and the one immediately below it is frequently avoided by sharpening the lower note. In the descending scale the sharps are removed, and the scale is identical with the major, beginning at its sixth and descending an octave. See example.

Major and minor scales which, like those given in the example, have the same key signature, are called *relative*. Thus, the major scale of G has for its relative minor the scale of E minor; the major scale of D has for its relative minor the scale of B minor; and so on. Each minor scale is also called the tonic minor to the major scale on the same keynote. The tonic minor scale to C major is C minor. One major scale is also said to be related to another when it is raised from its dominant or its subdominant: thus the scales of G and F are held to be nearly related to that of C.

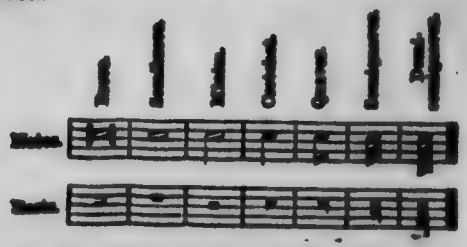


There is still another kind of scale, called the *chromatic* (Greek *chrōma*, color), because, like colors in painting, it embellishes the diatonic by its semitones. It consists of thirteen notes, and usually ascends by sharps and descends by flats.

Intervals in music (*i.e.*, the distance from any one note to any other) are reckoned always upwards and inclusively by the number of names of notes they contain, both limits to the interval being counted. Thus C to E is a third, both C and E being counted in the interval. They are known as major or normal when they are such as would be found in any major scale; as minor when the interval consists of a semitone less than the corresponding major interval; as augmented when consisting of a semitone more than major; as diminished when a semitone less than minor; and as simple or compound according as they fall within or exceed the compass of an octave.

Hitherto notes have been referred to only as representatives of the various sounds with reference to their pitch and distances from each other; but each note serves also to mark the relative duration of the sound it represents. Below are given the names and forms of the notes commonly in use, each in succession being half the duration of the note preceding it.

The stems of the notes may be written upwards or downwards as convenient. In connection with these notes other signs are used still further to indicate duration. A dot placed after a note lengthens it by one-half, two dots by three-fourths. Instead of the dot a note of its value may be written, and a curve, called a *tie*, written over it and the preceding note. Sometimes three notes of equal value have to be played in the time of two, in which case the figure 3 with a curve thrown over it is written above or below the notes. Two *triplets* (as this group is called) may be joined, and the figure 6 surmounted by a curve written over them; they are then performed in the time of four notes of the same form. A sensible interval of time often occurs between the sounding of two notes; this is represented by characters called *rests*, each note having a corresponding rest. A dot may be added to a rest in the same manner as to a note, to indicate an addition of a half to its length. See the example just given, which shows the rests in connection with their corresponding notes.



Every piece of music is divided into portions equal in time, called *measures*, which are separated from each other by vertical lines called *bars*. The term bar is often loosely applied to the measure as well as to the line. The exact length of the measure is indicated by a sign at the beginning of the piece of music. In common time, indicated by a C written after the clef, each measure contains a semibreve, or such notes and rests as make up together its value. Another form of common time, marked with a ¢, contains two

semibreves in the measure, or their equivalents in minims, crotchets, etc. Another method of indicating time (or rather more correctly, rhythm) is by figures, in the form of a fraction. The figures of the denominator are either 2, 4, 8, or 16, which (the semibreve being considered the unit) stand for minims, crotchets, quavers, and semiquavers respectively; and the numerator shows the number of these fractional parts of a semibreve in the measure. Besides common time, which may be indicated in two ways, there is triple time, in which a measure is made up of three minims, crotchets, or quavers, which can only be marked by figures; these are $\frac{3}{2}$, $\frac{3}{4}$, or $\frac{3}{8}$. When two or four measures of triple time are united in one measure the music is said to be written in compound common time, and is indicated by the fractions $\frac{6}{4}$ and $\frac{6}{8}$; rarer examples of compound time signatures are $\frac{9}{4}$, $\frac{9}{8}$, $\frac{12}{16}$, $\frac{12}{8}$, etc. The object of the division of musical passages into measures is to indicate their rhythm. Notes, like words or syllables, are *accented* or *unaccented*. The strongest accent is given to the first note of a measure. In common time of four notes to the measure the third has a subordinate accent, as, though in a less degree, the third measure note in triple time. In compound common time the subordinate accents fall on the first note of the last half of the measure, and in compound triple time on the first note of each of the groups of three of which the measure is composed. When a curve is placed over two notes in the same degree, but not in the same bar, the two notes are played as one of the length of both, and the first note acquires the accent. This displacement of the accent is called *syncopation*. If the curve is written over notes of different degrees it is called a *slur*, and indicates that the notes are to be played or sung smoothly, as if gliding into each other. When an opposite effect is wanted, that is, when the notes are to be produced distinct and detached (*staccato*), a dot is placed over them. The various degrees of loudness and softness which occur in a piece of music are indicated by such Italian words as *forte*, loud; *fortissimo*, very loud; *piano*, soft; *pianissimo*, very soft. In order to save time in writing music various abbreviations are used.

Melody is a particular succession of sounds in a single part, and is produced by the voice or by an instrument. A melody generally consists of an even number of phrases; this number may be four, eight, twelve, or sixteen. A phrase generally corresponds with a line in a verse of poetry. In order to produce an agreeable variety a melody may pass from the form of the scale in which it started to another, generally to the one most nearly related to it, that of the dominant or subdominant. This change from one key into another is called *modulation*. Except in very rare cases a melody ends on its keynote. A musical composition may consist of a series or progression of sounds so connected that several of them may be heard at the same moment. When several voices or instruments produce at the same instant sounds different in pitch, and so combined as to cause an agreeable sensation on the ear, the combination is called *harmonious*, and the proper method of combining these sounds is called the art of *harmony*. The series of notes taken by a single voice or instrument capable of producing only one note at a time is called a *part*. Four parts are by far the most common; but five, six, seven, eight, and even more numerous parts are common in the ecclesiastical compositions and madrigals of the old masters. When two sounds heard together are agreeable to the ear they are called *concordant*, or are said to form a *concord*; if, on the contrary, they grate upon the ear they are said to be *discordant*, or to form a *discord*. Concords are of two kinds—perfect and imperfect. The perfect is the minor fourth, the perfect fifth and the octave; the imperfect are the major and minor third, and the major and minor sixth. A perfect concord is so called because its conterminate sounds cannot be raised or depressed without becoming discordant. If three or more sounds be heard at the same time the combination is called a *chord*. When a chord is composed of concords only, or in other words when it is composed of a fundamental sound accompanied by its third (major or minor) and its fifth, it is termed a common chord. Of discords the most simple is the minor seventh, or, as it is usually called, the dominant seventh. The different motions of the parts which constitute harmony may be *parallel*, *direct* (or *similar*), *oblique* and *contrary*. Parallel motion is when two or more parts move in the same direction and remain at the same number of degrees distant; direct or similar motion is when the parts move in the same direction but do not remain at the same distance; oblique motion, either of the parts may be stationary while the rest move in parallel or contrary directions; contrary motion is when the parts approach or recede from each other. It rarely happens that all the parts can move in the same way upwards or downwards together. The rules generally given with respect to the motion and succession of concords are:

1. Octaves and fifths must not be consecutive in parallel motion. 2. Unnecessary and distant skips should be avoided as much as possible, and the chords should be as close and connected as may be. 3. The regular motion of the different parts must be observed; sharp intervals should ascend after the sharp, while flat intervals should descend after the flat. A piece of music harmonized throughout by concords would prove too cloying, and to prevent this discords are introduced. Certain discords are very disagreeable if produced abruptly without preparing the ear to receive them. The preparation of a discord is effected by taking care that the discordant note is heard in the preceding consonance. As the ear would not tolerate a long succession of discords it must be satisfied by a return to concords, which is called the resolution of a discord. This is effected by the part in which the discord appears moving upward or downward to the concordant note in the next chord.

History.—The first public use of music by every people has been in religious rites and ceremonies. The music of the Hebrew worship was of an elaborate character, and was probably derived from Egypt. To the Egyptian priests the Greeks seem also to have owed their ideas of music. It is confidently asserted by some that the Greeks were acquainted with harmony in the technical and musical sense of the word; that the notes A B C D E F G, produced by touching the white keys of the pianoforte, form the common Greek scale; and that their arrangement was copied from the keys of organs, which were derived by us from the Romans through the Greeks, and by the Greeks and Romans from ancient Egypt. The Romans derived all their public music from the Etruscans, and the art was for a long period confined to sacred uses. St. Ambrose (elected Archbishop of Milan 374) may be regarded as the father of the music of the Western Church, as he not only composed and adapted music to the different portions of the church service, but determined the musical idiom in which it was to be cast by selecting a set of simple scales from the exceedingly complicated system of the Greeks. His reputation has, however, been somewhat obscured by the next great musical reformer, Gregory the Great, whose epoch is fully two centuries nearer our own. During this long period the institutions of Ambrose fell into utter confusion, and Gregory, in attempting to restore order, found it necessary to supplement the Ambrosian scales, then first designated *authentic*, by four other subordinate or collateral scales called *plagal*. (See *Gregorian Tones.*) During the four centuries which connect the epoch of Gregory with that of Guido Aretino only two names are worthy of mention—that of Isidore, Archbishop of Seville, in whose *Sententiæ de Musica* we meet, for the first time at least among Christian writers, with the mention of harmony in the modern sense of the term; and that of Hucbald, a monk of St. Armand, Tournay (died 932), who not only mentions harmony, but gives examples of the harmony of his age, *diaphony* or *organum*. The greatest name, however, of the early middle ages is that of Guido Aretino (died 1050). The names which he gave to the notes, *Ut* (for *Do*), *Re*, *Mi*, *Fa*, *Sol*, *La*, are universally used to this day. *Si* was afterwards added by a musician named Le Maire. Within fifty years after the death of Guido a new form of musical art made its appearance, the characteristic of which was the combination of sounds of unequal lengths—music in which two or more sounds succeed one another, while one equal to them in length was sustained. This was called *discantus*, or descant. Descant, it is obvious, would argue the existence of some system of musical proportion among sounds of different duration, and written descant some means of distinguishing such sounds from one another. As might be expected, we hear of both inventions about the same time, the middle of the twelfth century, when the treatise on the *Cantus Mensurabilis* of Franco of Cologne was written, when notes appear first to have been used, and signs to represent the raising and depressing of individual sounds (flats and sharps) first came into being. Late in the thirteenth century we hear of Adam de la Hale, the Hunchback of Arras as he was called, born in 1240, the composer of several three-part songs, and also of the first comic opera, *Li Gieus de Robin et de Marion*. The beginning of the next century furnishes us with a remarkable evidence of musical advancement in the word *contrapunctum* (point against point), or as we now say, note against note. This word was first used in the works of Jean de Muris, the greatest theorist of the fourteenth century. The middle of the century gives us the first example of four-part music, in a mass performed at the coronation of Charles V of France (1360) and composed of Guillaume de Machault. By this time the organ had reached some degree of mechanical perfection, and several Belgian musicians visiting Rome in the last years of the fourteenth century carried

with them the first masses that had ever been seen there in written counterpoint. In the list of these singers (1380) we find the name of Dufay, whose compositions, though harsh in places to our modern ears, are far superior in design and clearness of texture to anything known to be produced by his predecessors. But the works of Dufay and his contemporaries have been cast into the shade by those of a later generation, of the masters of the new Belgian school, Ockenheim, his contemporaries and pupils. Canon, fugue, and imitation, practiced by Dufay, were greatly improved by Ockenheim, among whose pupils was Josquin Deprès, or Des Prez (died in 1521). The works of the latter drove those of every other composer from the churches of the Continent, and he was scarcely less successful in productions of a lighter class. His pupils and countrymen were to be found in every court and important city of the Continent, among the musical schools founded by them being those of Naples and Venice. The Italians, however, soon advanced beyond the limits of the art as taught by the Belgians. Constanzo Festa, whose *Te Deum* has been sung on the election of every pope since his time, was one of the creators of the madrigal; and Giovanni Animuccia is of special interest from his connection with St. Filippo de Neri, to which may be traced the origin of the oratorio. The first Roman school was founded by Claude Gondimel (1510-72), among whose pupils was the greatest composer the world had yet seen, Giovanni Pierluigi Palestrina (1524-94). Musical learning had by this time done its utmost. Every kind of contrapuntal artifice had been brought into play, but no attempt was made to bring out the meaning of the words, and this evil, in conjunction with the frequent use of secular melodies, came under the censure, first of the Council of Basel, and then of the Council of Trent. The committee appointed to carry out the decrees of the latter sought the aid of Palestrina, and his three masses, more particularly the third, the *Missa Papæ Marcelli*, at once saved music to the church, and established a type which is still recognized. At this period great musical skill and knowledge extended over every part of civilized Europe, the Italians being now, as the Belgians had been before, its chief masters and interpreters, except in England, which in this sixteenth century had a strictly national school comprising Tallis, Byrd, Farrant, Morley, Ward, Bull, Dowland, and last and greatest, Orlando Gibbons. The close of the century witnessed the birth of the *Opera seria*. Some faint approaches had been made in this direction before, but about the year 1580 a number of amateurs living in Florence, including Bardi, Corsi, Strozzi, Galileo (the father of the astronomer), and others, formed themselves into a society for promoting the closer union of poetry and music by reviving the musical declamation of the Greeks. Their attempts, however, were soon surpassed by the works of Claudio Monteverde, whose *Orfeo* opened up a new musical world. The first to profit by his discoveries was an artist born some twenty years later—Carissimi, the first great master of the sacred cantata in its various forms. He is said to have been the teacher of Alessandro Scarlatti, the founder of the Neapolitan school. With this school begins modern musical practice; better methods of fingering the keyed instruments, and of bowing the stringed instruments, not to speak of improvements in the instruments themselves; and above all these in importance and difficulty, the art of singing.

The history of the French school proper begins late in the seventeenth century, with J. B. Lully, born in 1633, the composer of many operas, ballets, and occasional pieces, and also of some church music. His music never had great popularity beyond France, but the influence of his example was extensive, and showed itself to some extent in Wise and Blow, and their immediate successors in the English Chapel Royal, the most distinguished of whom was Henry Purcell, the type of English composers. After him Arne, Croft and Green acquired a certain reputation, but an entirely new era was opened by the advent of Handel, who may be said to belong to England rather than Germany. From about the middle of the last century, when the career of J. Sebastian Bach ended, Germany has indisputably held the highest place in music. Gluck, Haydn, Mozart, Emmanuel Bach, and many others, before and after, owe much of the sweetness which they united with German strength to their study of the Italian masters. But in Beethoven, Weber, Spohr and Mendelssohn the traces of southern influence are hidden, and new emotional and poetic elements begin to find their way into music. Much, too, as the French musical drama owed in its origin to the Italians, its consolidation was the work of the Germans. Springing up with Lully, a Florentine, carried a step forward by Rameau, a Frenchman, it was subsequently immensely developed by Gluck and Meyerbeer (Germans), by Cherubini and Rossini (Italians), and by Méhul, Boieldieu, Hérold and Auber (Frenchmen). Against the best works

of the German masters, those of the purely sensuous school, represented by Donizetti, Bellini and Verdi, strove with some success for popularity; but the tide of victory was soon turned away from the south, and the last-named composer in his later works showed the force of the German influence. Of the later German school, claiming as its starting-point Beethoven's *Ninth Symphony*, in which poetry and music form a perfect whole, the chief exponents have been Wagner and Liszt, though with these, as manifesting more or less the same tendencies, must be cited the names of Schubert, Schumann, Mendelssohn, Berlioz, Chopin and Franz. Opinions may differ as to the extent to which this new development anticipates 'the music of the future,' but there can be no doubt as to the beauty and impressiveness of much of the work of these so-called 'tone-poets.' Among the later composers may be noted the names of Gounod, Massenet and Saint-Saens in France, Brahms and Strauss in Germany, Dvorak in Bohemia, Puccini in Italy, Rubinstein and Tschaikowski in Russia, MacDowell in America, and Grieg in Scandinavia. All have given proof of power and originality.

Music of the Spheres. See *Harmony of the Spheres.*

Musk, a substance used in perfumery and medicine, and obtained from several species of deer. (See *Musk-deer.*) A perfume of similar character is also obtained from one or two other animals (see *Musk-rat*); and various animals and plants are noted for emitting a strong musky smell.

Musk-deer, a genus of deer, forming the type of the family Moschidæ, which is essentially distinct from the family of the Cervidæ, or true deers. Their chief habitat is Asia and the

Musk-deer (*Moschus moschiferus*)

islands of the Eastern Archipelago; though one species is found on the west coast of Africa. The typical species of the family is the *Moschus moschiferus*, found chiefly in the elevated tablelands of Central Asia, and particularly of Tibet. These animals attain the size of a young roe-deer, and the upper jaw bears prominent canine teeth. The males alone yield the *musk*, which is secreted by an abdominal gland of about the size of a hen's egg. The Tibet musk is most in repute, that known as Russian or Siberian being inferior in quality. Besides its familiar use as a scent, musk is employed medicinally as an antispasmodic. There are six or seven other species of *Moschus*, two of which, very diminutive, lack the musk gland.

Musk-duck, a species of duck, often erroneously called the Muscovy-duck (*Cairina moschata*), a native of America, and which has been domesticated. It has a musky smell, and is larger and more prolific than the common duck.

Muskegon (mus-kē'gun), county seat of Muskegon County, Michigan, the largest city on the east shore of Lake Michigan. It was formerly a great lumber city but every mill is now gone. An art gallery, library, hospitals, and splendid schools founded and endowed by lumber kings are chief reminders of its past. It has the largest harbor on the Great Lakes, and there are huge hydro-electric power developments on the river near by. Greater Muskegon is made up of three separately governed cities. Aggregate pop. 31,000.

Musket (mus'ket), a hand-gun with which infantry soldiers were formerly armed. When first introduced, early in the sixteenth century, as a development of the culverin and arquebus, it was discharged by means of a lighted match (hence the name *matchlock* given to it), and was so heavy that it had to be laid across a staff or *rest* to be fired. To make use of it the soldier was required to carry a slow-burning match with him, which was apt to be extinguished in wet weather. The wheel-lock followed (sixteenth century), the chief feature of which was a wheel made to revolve by means of a spring, and to cause sparks by friction against a flint. The next improvement was the flint-lock proper (about 1625), in which sparks were produced by one impact of a piece of flint on the steel above the priming powder. Musketeers were soon introduced into all armies, and in the beginning of the seventeenth century infantry consisted of pikemen and musketeers, and all changes in regard to the relative proportion of the two arms were always in favor of the latter. The flint-lock musket was intro-

duced into the British army towards the end of the seventeenth century, and was the British musket of the days of the Peninsular war and Waterloo, known familiarly as 'Brown Bess.' It was superseded by the percussion musket in 1842, this musket being in turn superseded by the rifle. See *Rifle*.

Musketoon (mus-ke-tōn'), a short thick musket, now obsolete, of very wide bore, and sometimes bell-mounted like the blunderbuss, carrying a ball from 5 to 7½ ounces.

Muskingum (mus-kin'gum), a river in the State of Ohio, and falling into the Ohio River at Marietta. It is about 120 miles long, and its course is followed by the Ohio and Erie Canal as far as Zanesville.

Musk-mallow (musk-mal'ō; *Malva moschāta*), a perennial plant, so named from the peculiar musky odor thrown off by all parts of the plant.

Musk-melon, a delicious variety of melon, named probably from its fragrance.

Muskogee, a city of Muskogee County, Oklahoma, 117 miles s. of Parsons. It is the seat of Harry Kendall College. The industries include cotton gins and compresses, flour mills, etc. Pop. 25,278.

Musk-ox (*Ovibos moschātus*), an animal intermediate between the ox and sheep. Resembling in general appearance a large goat-like sheep, its body is covered with a coat of tufted hair, brownish in color and of great length. The hair about the neck and shoulders is so thick as to give the animal a 'humped' appearance; on the rest of the body it is very long, smooth and flowing, while interspersed among its fibers is a layer of lighter-colored wool. The musk-ox is active and agile, climbing mountainous places with ease and dexterity. The horns, broad at the base and covering the forehead and crown, curve downwards between the eye and the ear, and then upwards and slightly backwards. The horns of the female are smaller than those of the male, and their bases do not touch. The ears are short, the head large and broad, the muzzle blunted. The average size of the male is that of a small domestic ox. Gregarious in habits, each herd numbers from twenty to thirty members. The female brings forth one calf in May or June. The food consists of grass, lichens, etc. The musk-ox inhabits the Arctic regions of America north of the 60th degree of latitude to the upper extremity of Greenland. The flesh is pleasant to the taste, though it smells strongly of musk, the odor of which is also diffused from the living animal.

Musk-plant, a little yellow-flowered musky-smelling plant of the genus *Mimulus* (*M. moschātus*), a native of Oregon and some other western states and cultivated to some extent in gardens.

Musk-rat (*Fiber zibethicus*), an American rodent allied to the beaver, and the only known species of the genus. It is about the size of a small rabbit, and has a flattened lanceolate tail, covered with small scales and a few scattered hairs. Its toes are separate, and provided with a stiff fringe of hair. In summer it has a smell of musk, which it loses in winter. The odor is due to a whitish fluid deposited in certain glands near the origin of the tail. Of considerable commercial importance on account of its fur, the musk-rat, or *musquash*, as it is frequently called in America, from its Indian name, is taken in large quantities for its skins, large numbers of which are used by furriers. Very common in North America, the musk-rat lives along the margins of streams, in the banks of which it makes its nest. The musk-rats of Europe, or desmans (*Myogāle moschāta* and *M. pyrenaica*), are aquatic insectivorous animals allied to the shrews and moles, having a long flexible nose, and a double row of glands near the tail secreting a substance of a strong musky smell; found in Southern Russia and the Pyrenees. The musk-rat of India (*Sorex Indicus* or *myosūrus*) is a kind of shrew the size of the common rat.

Musk-tree, MUSK-WOOD, the names of trees and wood that smell strongly of musk. The musk-wood of Guiana and the West Indies is *Guarea trichilioides*; the musk-tree of Tasmania, *Eurybia argyrophylla*.

Muslin (mus'lin), a fine thin cotton fabric, first made at Mosul or Moussul (whence the name), afterwards in India, and first imported into England about 1670. About twenty years afterwards it was manufactured in considerable quantities both in France and Britain, and there are now many different kinds made, as *book*, *mull*, *jaconet*, *leno*, *foundation*, etc. Some Indian muslins are of extraordinary fineness, but they can all be rivaled in Europe. *Figured muslins* are wrought in the loom to imitate *tambouré* muslins, or muslins embroidered by hand.

Muspelheim (mus'pel-him), in the Scandinavian mythology, the southern part of the universe and the abode of fire, whence sparks were collected to make the stars. At the ego-

site pole to Muspelheim is Niflheim, where all is frozen, cold and dark.

Muspratt (mus'prat), JAMES SHERIDAN, an English chemist, born in 1821; died in 1871. He studied chemistry under Thomas Graham, both at Glasgow and in London, and afterwards under Liebig at Giessen, in Germany, where he remained several years. In 1850 he established a college of chemistry at Liverpool. His chief work was a *Dictionary of Chemistry*, but he was also the author of various contributions to scientific journals.

Musquash (mus'kwosh), a name for the musk-rat.

Musschenbroek (mus'h en-brōk), PIETER VAN, a Dutch natural philosopher, born at Leyden in 1692. He held professorial chairs successively at Duisburg, Utrecht and Leyden, where he died in 1761. He visited England, became acquainted with Newton, and was made a fellow of the Royal Society. His principal works are *Elementa Physica*, *Tentamina Experimentorum*, *Institutiones Physicæ* and *Compendium Physicæ Experimentalis*.

Mussel (mus'el), a term popularly given to several lamellibranchiate molluscs, section Asiphonida, or those in which 'siphons,' or tubes admitting water to the gills, are absent. The common mussel (*Mytilus edūlus*) forms a typical example of the family Mytilidæ, the shells of which family are equivalve, and have a hinge destitute of teeth. It has a 'beard,' and is the same as the salt-water mussel of New England. The mussel is extensively employed in Scotland as a bait by deep-sea fishermen; and in some districts it is used as an article of food, the best mussels approaching nearly to the oyster in flavor, though occasionally found to be unwholesome. It is cultivated as an article of diet on the European coast in the 'mussel-farms' of the Bay of Aiguillon, near Rochelle in France, forming the most notable example. The family Unionidæ includes the fresh-water or river mussels (*Unio*) and the swan or pond mussels (*Anodon*). The Unionidæ inhabit fresh water exclusively. The pond mussels, of which many species are known, are found in the rivers and lakes both of Europe and America. The hinges of the shell in the genus *Anodon* are destitute of teeth, in the genus *Unio* toothed. The *Unio littorālis* is a familiar species. The *Union margaritifĕrus*, or pearl-mussel, has attained a reputation from the fact that it has yielded pearls to a considerable value in the Don, Tay, Doon, Forth, Spey, and other British streams.

Musselburgh (mus'el-bur-ō), a burgh of Scotland, in Midlothian, 6 miles east of Edinburgh, on the Firth of Forth, at the mouth of the Esk, which divides it into two parts, ancient Musselburgh and Fisherrow. It has a bridge, believed to be of Roman erection; and a curious old tolbooth, not now used as a jail. The battle of Pinkie, in 1547, was fought in the vicinity. Pop. 11,711.

Musset (mū-sā), LOUIS CHARLES ALFRED DE, a French poet, novelist and dramatist, born at Paris in 1810; died there in 1857. After trying various professions he gave himself up wholly to literature, and in 1829 published a volume of poems called *Contes d'Espagne et d'Italie*, which had an immediate and striking success. In 1831 appeared *Poésies Diverses*, and in 1833 *Un Spectacle dans un Fauteuil*, in which the two chief pieces are a comedy of a light and delicate grace called *A quoi Rêvent les Jeunes Filles*, and a poem entitled *Namouna*, written after the manner of Byron. In 1833 he traveled in George Sand's company, but their intimacy soon came to an end. In 1836 was published his *Confession d'un Enfant du Siècle*, a gloomy novel, containing the analysis of a diseased state of mind, all the phases of which the author had studied in himself. The same settled melancholy also distinguishes his *Rolla*, *Une Bonne Fortune*, *Lucie*, *Les Nuits*, *Une Lettre à Lamartine*, *Stances à Madame Malibran*, *L'Espoir en Dieu* and other poems. Among his light and sparkling dramatic pieces are: *On ne badine pas avec l'Amour*, *Les Caprices de Marianne*, *Il ne faut pas jurer de Rien*, etc. In 1848 Musset was deprived by the revolution of the situation of librarian to the ministry of the interior, a sinecure which he had obtained through the favor of the Duke of Orleans; but he was restored to this post under the empire, and was in addition appointed reader to the empress. In 1852 he was admitted a member of the French Academy. De Musset was one of the most distinctive, and, in a certain sense, original of modern French writers. At a time when the battle between the Classicists and Romanticists was at its height he took sides with neither, but made for himself a style combining the excellences of the two schools. His elder brother, Paul, was also a writer of some ability, but always overshadowed by the brilliance of Louis.

Mussulman. See *Moslem*.

Must, the juice of the grape, which by fermentation is converted into wine.

Mustang (mus'tang), a small wild horse of the Southwestern United States and Northern Mexico, where it is found in extensive herds, and is captured and tamed as the Indian pony. A reversion from the domesticated stock, it seldom exceeds 13 hands in height, but is a strong and useful animal, capable of great endurance.

Mustard (mus'tard), the common name of plants of the genus *Sinapis*, nat. order Cruciferæ. The seeds of the *S. alba* and *S. nigra* (white

Mustard (*Sinapis nigra*).

and common mustard), when ground and freed from husks, form the well-known condiment of the shops. The plant is an annual, with stems 3 to 4 feet in height, lower leaves lyrate, upper lanceolate and entire flowers small and yellow. The preparation from the seeds is often very valuable as a stimulant to weak digestion, and as an adjunct to fatty and other indigestible articles of food. When mixed with warm water and taken in large quantities it acts as an emetic. The tender leaves are used as a salad, and the seeds of *S. nigra* are used in the well-known form of poultice, being applied to various parts of the skin as a rubefacient. *Wild mustard* or *charlock* (*S. arvensis*) is a troublesome weed in cornfields, often making them yellow with its flowers. Its seeds are said to have yielded the first Durham mustard, and they are still gathered to mix with those of the cultivated species.—*Oil of mustard* is an essential oil obtained from the seeds of *S. nigra*. It is very pungent to the taste and smell, and when applied to the skin speedily raises a blister.

Mustela (mus-tē'la), the weasel genus of carnivorous animals.

Muster (mus'tēr), in a military sense, a review of troops under arms, to see if they be complete and in good order, to take an account of their numbers, the condition they are in, their arms and accouterments, etc.

Muster-roll, a list of the officers and men in every regiment, troop, or company of soldiers.

Musulman. See *Moslem*.

Mutiny (mū'ti-ni) is the unlawful insurrection or revolt of soldiers or seamen against the authority of their commanders; open resistance of officers or opposition to their authority. A mutiny is properly the act of numbers; but by statutes and ordinances for governing the army and navy the acts which constitute mutiny are multiplied and defined; and acts of individuals, amounting to resistance of lawful commands of officers, are declared mutiny. Officers beginning or joining mutiny are guilty of the offense. Mutiny is punishable in the navy by fine or imprisonment, or both; in the army it is punishable by death or such other punishment as a court-martial shall direct.

Mutsuhito (möts-u-hē'to), former emperor or mikado of Japan, was born in 1852, and succeeded to the throne in 1867, marrying the Princess Haruko in 1869. His reign was marked by great reforms, among them the suppression of the feudal organization of the nobility, which so long impeded the political progress of the country. Others were the giving Japan a representative system of government and adopting the institutions of Western civilisation. Under his reign Japan made remarkable progress, which not only placed it foremost among Asiatic nations, but ranked it among the great powers of the world. This was the result of successful wars waged against China and Russia. Mutsuhito proved himself an able and progressive ruler. He died in 1912, and was succeeded by his son Y hito, who was born in 1879.

Muttra (mut'tra), town in India, capital of Muttra district, on the Jumna, 36 miles northwest of Agra. It is an old Hindu city, one of the most artistic and interesting in India, and being regarded as the birthplace of Krishna is a great center of Hindu devotion and place of pilgrimage. Pop. 60,042.

Mutule (mū'tūl), an ornament in Doric architecture, corresponding to the modillion in the Corinthian and Composite orders, and consisting of a projecting block in the cornice immediately under the corona and perpendicularly above the triglyph. It is often made to slope downwards towards the front,

and usually has guttæ or drops underneath.

Muzaffarnagar (mö-suf'fur-nag-ur), a town of India, 70 miles N. N. W. of Delhi; chief town of district of same name. Pop. 23,444.

Muzaffer-ed-Din, shah of Persia, born in 1853, son of Nasr-ad-Din. He succeeded in 1896, on the death of his father by assassination and died in 1902.

Muziano (mōt-se-ä'nō), Girolamo, Italian painter, born near Brescia in 1528. After studying the art of Titian he repaired to Rome about 1550, where he soon attracted attention by his landscapes. Subsequently he became an imitator of the style of Michael Angelo, and his picture of the *Raising of Lazarus* at once established his fame. He also made great improvements in mosaic work. The handsome fortune gained by his talents and industry he devoted in part to assisting to found the Academy of St. Luke at Rome. Died 1590 or 1592. Many of his works are to be met with in Rome.

Muzo (mö'sō), a village in the state of Colombia, South America, N. W. of Bogota, noted for its rich mine of emeralds.

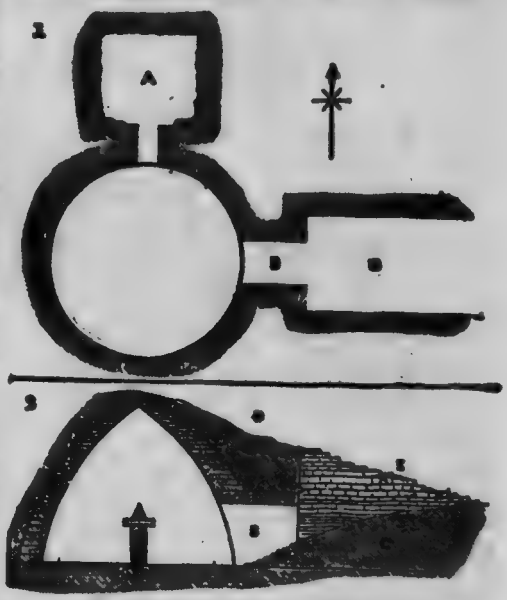
Mycelium (mi-sē'li-um), the cellular filamentous structure of fungi. Mycelium consists of whitish anastomosing filaments which spread like a network through the substances on which the fungi grow. In the cells of the mycelium reproductive spores are developed.

Mycenæ (mi-sē'nē), an ancient city of Argolis, in the Peloponnesus, about 6 miles northeast of Argos. It is said to have been founded by Perseus, and before the Trojan war to have been the residence of Agamemnon, in whose reign it was regarded as the leading city in Greece. Its ruins are extremely interesting from their antiquity and grandeur. Among them are the Lion's Gate, and the vaulted building of enormous stones called the *Treasury of Atreus*, etc. Dr. Schliemann carried out excavations here with valuable and interesting results.

Myconi (mik'o-nē; anciently *Myconos*), an island in the Grecian Archipelago, one of the Cyclades, about 21 miles in circuit. The inhabitants are chiefly employed in seafaring pursuits. The capital, Myconi, a seaport, contains about 3400 inhabitants. The island produces barley, raisins, and figs, with some wine. Pop. 4466.

Myelitis (mi-e-li'tis; from the Greek *myelos*, marrow), in medicine, inflammation of the substance of the spinal marrow.

Myers (mi-ers), Frederick W. H., an English physicist, born in 1843. He became an active member and secretary of the Society for Psychical Research, and published *Essays Modern and Classical*, *Science and a Future Life*, and, in collaboration, *Phantasms of the Living*. His most important work is *Human Personality and its Survival of Bodily Death*, a critical review of the spiritualistic hypothesis. He died in 1901.



Treasury of Atreus, Mycenæ.

1, Plan.—A, Rock-cut Chamber. B, Doorway. C, Approach. 2.—Section C, Approach filled with earth. D, Slope of hill. E, Wall on north side. F, Lintel. G, Door to A.

Mygale (mig'-al), a genus of spiders, the type of the family Mygalidæ, furnished with four pulmonary sacs and spiracles, four spinnerets, eight eyes, and hairy legs. Their nests, constructed of silk, are built in clefts of rock, trees, etc., and in the ground. The bird catching spider of Surinam belongs to this species; other larger species frequently prey on small vertebrate animals, not by laying toils for them, but by regularly hunting them. They envelop their eggs in a kind of cocoon.

Mylabris (mi-lab'ris), a genus of coleopterous insects nearly allied to the Cantharides (which see), noteworthy because of the use made of some species as a blister-fly.

Mylitta (mi-lit'ta), an Assyrian goddess, identified by the Greeks

with Aphroditē. She was, as goddess of the moon, the female principle of generation.

Mylodon (mil'ō-don), a genus of extinct edentate mammalia, allied to the megatherium. Its remains have been found in the upper tertiaries of South America. In size the *Mylodon robustus*—the most familiar species—attained a length in some instances of 11 feet. Of terrestrial habits, the mylodon

Skeleton of Mylodon.

obtained the vegetable food upon which it subsisted chiefly by uprooting trees. The genus ranged into North America, remains of one species (*M. harlani*) having been found in the United States.

Myograph (mī'-ō-graf), an instrument for recording contractions and relaxations of the muscles. Several forms have been devised, that of M. Laulanie being styled myoscope.

Myology (mī-ol'-ō-ji; Greek, *mys*, muscle, and *logos*, science), the term applied distinctively in anatomical and physiological science to the description of the muscular system both in its structural and functional aspects.

Myopia (mī-ō'pi-a), the scientific name for short-sightedness. See *Sight, Defects of.*

Myosotis (mī-o-sō'tēz), a genus of plants belonging to the Boraginaceæ, and comprising numerous European and Northern Asiatic, a few North American, and three of four Australian species. The *M. palustris* is the well-known forget-me-not. Other species are popularly known as scorpion-grass.

Myoxus (mī-oks'us), the dormouse genus of animals.

Myriapoda (mir-i-ap'o-da; *myriot*, ten thousand, and *pous*, *podos*, foot), the lowest class of the higher annulose or anthropodous animals, represented by the centipedes, millepedes, and their allies, and resembling the Annelids in the lengthened form and the numerous segments of the body, each segment being provided with one pair of ambulatory feet, whence the name. They have a distinct

MYRIAPODA.

1, *Geophilus safeberii*, one of the Chilopoda.
2, *Iulus plicatus*, one of the Chilognatha.

head, but no division of the body into thorax and abdomen, as in insects. They are therefore of a lower structural type than insects, which in general organisation they resemble. No wings are developed. They respire through minute spiracles or pores along the whole length of the body, and are invested with a hard chitinous or horny covering or exoskeleton. This class is divided into two orders, the Chilognatha or Diplopoda, in which the fusion of two rings gives apparently two pairs of feet on each ring; and the Chilopoda, which have two pairs of foot-jaws or maxillipeds, and not more than one pair of feet on each segment.

Myristica (mir-is'ti-ka), the only genus of the nat. order Myristicaceæ. *M. fragrans*, a native of the Moluccas, yields the nutmeg of the shops. Other species bear fruit that may be employed as a substitute for nutmeg.

Myrmecoph'aga. See *Ant-eater.*

Myrme'leon. See *Ant-lion.*

Myrmidons (mir'mi-donz), an anorent Greek people of Thessaly, who accompanied Achilles to the Trojan war. They are said to have emigrated into Thessaly under the leadership of Peleus. The term has come to signify the followers of a daring and unscrupulous leader, or the harsh and unfeeling agents of a tyrannical power.

Myrobalan (mi-rob'a-lan), a dried fruit of various species of trees, brought from the East Indies, all slightly purgative and astringent. Mirobalans are used by the Hindus in calico printing and medicine, and imported into United States for dyers and tanners, especially the latter. They are the produce of several species of Terminalia (order Combretaceæ), the chief of which are the belleric myrobalan (*T. Bellerica*) and

the chebulic (*T. Chebulica*). Written also *Myrobalan*, *Myrobolam*, etc.

Myron (mī'ron), one of the chief sculptors of the older Attic school, who flourished in the middle of the fifth century B.C. The famous *Discobolus*, or *Quoit Player*, is the only certainly known work of his a copy of which has come down to our time.

Myrrh (mer), a plant. See *Chervil*.

Myrrh, is the name given to a gum resin which exudes from a shrub growing in Arabia and Abyssinia, called *Balsamodendron Myrrha*. It was much esteemed as an unguent and perfume by the ancients, who used it also for embalming and for incense. It is still used as a perfume and for incense, as also medicinally. By distillation with water myrrh yields a viscid, brownish-green, volatile oil. Myrrh of the best quality is

Myrrh (*Balsamodendron Myrrha*).

known as Turkey myrrh; that of an inferior kind goes under the name of East Indian, being exported from Bombay.

Myrtaceæ (mir-tā'se-ē), the myrtle tribe, an extensive and important nat. order of polypetalous exogens, mostly inhabiting warm countries, and in all cases either shrubs or trees. They have simple entire leaves, often dotted with resinous pellucid glands and regular, axillary and solitary, or spiked, corymbose, or panicled white, pink, or yellow (never blue) flowers, with numerous stamens. Some yield useful products, such as guavas, cloves, pimento, Brazil-nuts, and cajeput oil. The eucalypts or gum-trees are characteristic of Australia.

Myrtle (mer'tl; *Myrtus*), a genus of plants, nat. order Myrtaceæ, consisting of aromatic trees or shrubs, with simple opposite leaves sprinkled with pellucid glandular points, and having axillary or terminal white or rose-colored flowers. One species, the common myrtle, is a native of the south of Europe and other countries bordering on the Mediterranean. It has been celebrated from remote antiquity on account of its fragrance and the beauty of its evergreen foliage, and by different nations was consecrated to various religious purposes. The brows of bloodless victors were adorned with myrtle wreaths, and at Athens it was an emblem of civic authority. With the moderns it has always been a favorite ornamental plant. It flourishes in the open air only in warm countries. The seeds of several species, as the small-leaved myrtle of Peru, the limia myrtle of Chile, and some others, are palatable and eaten by the people.

Myrtle Wax. See *Candleberry*.

Mysia (mis'i-a), in ancient times the name applied to a district in the northwest of Asia Minor, which varied greatly in extent at different periods.

Mysis (mī'sis), the opossum shrimps, a genus of crustaceans belonging to the order Stomapoda. They are the chief crustaceans of the Arctic Ocean, and constitute the principal food of the whalebone whale.

Mysole (mi-sōl'), an island in the Indian Archipelago, between Ceram and the northwest extremity of New Guinea. It is about 50 miles long by 15 miles broad, and is inhabited by immigrant Malays and by Papuans. Trepang, ambergris, birds of paradise, pearls, etc., are exported.

Mysor (mī-sōr'), or MYSORE, a principality of Southern India; area, 27,936 square miles. It is inclosed east and west by the Eastern and Western Ghauts, and on the south by the Nilgiri Hills, and consists of table-lands about 2000 feet above the level of the sea. The only river of importance is the Kaveri. There are many large tanks and artificial reservoirs used for irrigation, and the soil produces all the grains and vegetables of the other parts of India and many of the fruits of Europe. Coffee and silk are largely produced, and there are valuable forests. Silk and cotton manufactures are carried on, and there are manufactures of cutlery, copper vessels, and gold and silver lace. Mysor is the capital. Bangalor is the British headquarters. The revenue and expenditure of the principality are somewhat over £1,000,000. The ruinous misgovernment of the native prince whom the British had set up in Mysor caused his deposition in 1831. The territory continued under British administration till 1881, when it was handed over to a na-

tive maharajah educated under the care of the British. Pop. 5,539,399.

Mysor, the capital of the state of the same name, 250 miles west by south of Madras, stands at an elevation of 2450 feet above the level of the sea. The streets are regular, and the houses intermingled with trees and temples. The fort, separated from the town by an esplanade, is built in the European style. It contains the rajah's palace (which boasts a magnificent chair or throne of gold) and the dwellings of the principal merchants and bankers, and other private edifices. To the south of the fort and about 5 miles from the city is Mysor Hill, on the summit of which is the British residency. The leading industry is carpet-weaving. Pop. (1910) 71,300.

Mysteries (mis'ter-iz), a kind of rude dramas which were a favorite spectacle in the middle ages, represented at solemn festivals. The subjects were of a religious character, and the ecclesiastics were at first the performers and authors, the performance being in church. Such plays were called *mysteries* because they taught the mysterious doctrines of Christianity, and the mysteries proper represented scenes from Scripture history, being thus distinct from the *miracle* plays which dealt with lives of saints, though the distinction is not always attended to. These plays were usually exhibited in a connected series by the guilds or trades of a town. They sometimes took several days to perform. Thus we hear of one which lasted eight days, and contained the greater part of the Scripture history, beginning with the creation and ending with the judgment day. The *Passion of Christ*, the *Slaughter of the Innocents*, etc., were among the subjects represented, the first perhaps more frequently than any other. Corpus Christi day was the chief occasion on which they were performed, and they continued from the twelfth to the sixteenth century. Such plays are still performed at various places in Roman Catholic countries. The passion-play performed at the village of Oberammergau, in Bavaria, every ten years, is a play of this kind. The mysteries were superseded by the moralities (which see).

Mysteries, among the ancient Greeks, and afterwards also among the Romans, secret religious assemblies which no uninitiated person was permitted to approach. They originated at a very early period, and seem to have had a double object—first, that of handing down the traditions relating to the divinities in whose honor they were celebrated; and secondly, that of teaching and practicing religious rites. The most important Greek Mysteries were—1, The Eleusinian (see *Eleusis*). 2, The Samothracian, celebrated in honor of the Cabiri (see *Cabiri*). 3, The Dionysia, which were celebrated in honor of Bacchus or Dionysius. These were of so licentious a character that they were finally forbidden as prejudicial to the public peace and morals. This was likewise done in Italy by a decree of the Roman Senate in 166 B.C. 4, Orphic, founded by some who called themselves followers of Orpheus.

Mysticism (mis'ti-sizm), a word of very vague signification, applied sometimes to views or tendencies in religion which aspire towards a more direct communication between man and his Maker through the inward perception of the mind, than that which is afforded through revelation, or to efforts or inclinations by some special and extraordinary means to hold intercourse with divine powers or the inhabitants of higher worlds. According to John Stuart Mill, 'whether in the Vedas, in the Platonists, or in the Hegelians, *mysticism* is neither more nor less than ascribing objective existence to the subjective creations of our own faculties, to ideas or feelings of the mind, and believing that, by watching and contemplating these ideas of its own making, it can read in them what takes place in the world without.' The tendency towards mysticism seems naturally implanted in some natures, and has been observed in all ages. It is a characteristic feature of the great Asiatic religions, Brahmanism and Buddhism. In the Neo-Platonic philosophy it is an important element, as represented by Plotinus (204-269 A.D.). Christianity, in consequence of its special tendency to practical good, as well as of its submission to a system of doctrine expressly revealed, would seem to have afforded little scope for the extravagances of mysticism. It soon, however, made its appearance, forming a kind of profane mixture, and reached its extreme in the writings of the so-called Dionysius the Areopagite. This pseudo-Dionysius obtained an extensive influence, especially through Hugo St. Victor, in the twelfth century, and was everywhere held in high respect until the time of the Reformation. In opposition to scholasticism, which labored in the construction of a systematic and almost demonstrative theology, this system embodied a theology of feeling and immediate illumination, which attached very little importance to intellectual effort, and laid so much the more weight on purification of heart and ascetic morality. Of the most notable of the German mysticists in the middle ages were Eckhart and

Tauler. In the philosophy of the fifteenth and sixteenth centuries, in Paracelsus, Bruno, and others, mysticism took a direction which at a later period gave rise, on the one side, to the alchemists and Rosicrucians, and on the other side to a number of religious sects, of which such men as Jacob Böhmen and Swedenborg may be considered the representatives. The Quietism of Madame Guyon and her adherents (such as Fénelon) in France in the eighteenth century was a product of the same nature.

Mytens (mi'tens), DANIEL, a Dutch portrait painter, born at The Hague about 1590. He came to England in the reign of James I, and was named painter to Charles I. But after several years' enjoyment of royal and aristocratic favor he declined before the rising star of Vandyke and returned to Holland. Many of his portraits are at Hampton Court.

Mythology (mi-thol'o-ji; Greek, *mythos*, a tale or fable, and *logos*, a discourse), the collective name for the whole body of fables, legends, or traditions (myths) that take their rise at an early period of a nation's existence and of its civilization, and that embody the convictions of the people among whom such fables arise as to their gods or other divine personages, their origin and early history and the heroes connected with it, the origin of the world, etc. Such fabulous narratives seem to grow up naturally among all early peoples, and are found among the ruder races at the present day; but the mythologies which have been most studied, and the tales belonging to which are best known, are those of ancient Greece and Rome, Scandinavia, the Hindus, and ancient Egypt. Though speculations as to the origin of mythology have been put forth from a very early period, it is only in recent times, by the help of comparative philology, and by comparing together the myths of different peoples (comparative mythology), that any real advance has been made. Myths are of course believed in by the bulk of the people among whom they are current, and it is only when speculative and reflective spirits arise, and when science and philosophy have made some advances, that their truth is called in question. Thus Zeus, Apollo, Athēnē, Heracles, and the other divinities of ancient Greece, were believed by the bulk of the people to have a real existence, and the stories regarding them were looked upon as true; but even in Greece in early times the absurdities and monstrosities of some of the myths attracted the attention of philosophers, and led to attempts at explaining the stories in such a way as that they should not shock common sense or moral feeling. In doing this three chief systems of interpretation were followed, called respectively by Max Müller the *ethical*, the *physical*, and the *historical*. Those who adopted the first explained that the stories of the power and omniscience of the gods, of their rewarding good and punishing evil, were invented by wise men for the purpose of maintaining law and order in communities—leaving it to be supposed that the immoral representations of the gods were the inventions of poets. The interpreters of the physical (also called the *allegorical*) school held that the myths contained explanations of natural phenomena, or of certain views regarding them, under a peculiar phraseology, which disclosed its hidden wisdom when rightly understood. The third or historical school, identified with the name of Euhemerus, represented the gods as having been originally kings or chiefs, great warriors, sages, or benefactors of the human race, who, being exalted above their fellowmen in life, after their death gradually came to be looked upon as deities.

Perhaps the most common theory of mythology at the present day is one that is based upon comparative philology, and on a comparison of the myths of the different Indo-European nations, and finds its chief exponents and supporters in Max Müller and Sir George W. Cox. It maintains that all myths have their origin in physical phenomena; but it differs from the older physical or allegorical school in explaining myths as an unconscious product of the popular mind, whereas an allegory (such as the older physical school represented myths to be) is a conscious product of some individual mind. The exponents of this school tell us that in order to understand how myths grow up naturally we must carry our thoughts backwards to an early stage of language and civilization, when men have little or no real knowledge of the external world, when they use themselves as the gauge of all phenomena, and endow every object of sense with a conscious life similar to their own, applying to inanimate objects the language which they use when speaking of their own feelings or actions. Thus in early times men would speak quite naturally of the sun as the child of the night, as the destroyer of the darkness, as the lover of the dawn and as deserting her, as traveling over many lands, as the child of the morning, as her husband, as her destroyer, and so on. This language was

natural in early times, and was perfectly understood as descriptive simply of natural phenomena, and nothing else; but in course of time such expressions lost their natural significance, and in this way it was explained that Phœbus Apollo, Endymion and Phaëthon, for instance, all originally significant epithets applied to the sun from his brilliancy or other characteristic, became the names of divinities, who were regarded as quite distinct from each other. So Zeus originally meant the sky, Athênê and Daphnê the dawn, Hermes the wind, and so on. According to this theory the story of Apollo slaying the children of Niobê with his arrows is nothing more than a mythological way of telling how the morning clouds are dispersed before the rays of the rising sun. Heracles or Hercules, again, is the sun laboring throughout his life for the benefit of others; soon after birth he strangles the serpents of darkness, and after performing innumerable toils he dies on the funeral pyre, as the sun sinks in the fiery west. Endymion, as his name implies, is the setting sun, who is courted by the moon, and who sinks to sleep in the west. Some of these identifications of deities with natural phenomena are pretty certain. Zeus, for instance, the supreme god of Greece, the same as the Jupiter of the Romans and the Dyaus of the early Hindus, is clearly the bright sky and among the Hindus the name of the sky-god Dyaus always retained its meaning of sky, so that Dyaus had only an indistinct personality as a deity. The Hindu Varuna, a sky-god, is clearly the same as the Greek Ouranos, which latter word, besides being the name of a deity, had the ordinary signification of sky or heaven. So the Scandinavian Thor, the god of thunder, can hardly be anything else than thunder personified. Yet as a whole the 'solar theory' cannot be accepted as a key to all mythology. It fails to account for many of the wild and monstrous myths told of deities, of the creation of the world, of the state of the dead, etc., and though it may throw a certain amount of light on the mythology of the Aryan or Indo-European nations, it is quite insufficient when myths as a whole are investigated.

Another road, therefore, has been taken by some recent investigators. Thus Mr. Andrew Lang finds a key to mythology in a study of the myths and mental habits of savage races; he maintains that 'the savage and senseless element in mythology is for the most part a legacy from ancestors of the civilized races who were in an intellectual state not higher than that of Australian Bushmen, Red Indians, the lower races of South America, and other worse than barbaric peoples,' and that the monstrous myths current in Greece, Egypt and India were thus inherited. He points to the currency of such myths among savages at the present day, and to the fact that in general savages are eager to arrive at some explanation of the natural phenomena around them, and are quite satisfied with explanations that to civilized men may seem even imbecile. When a phenomenon presents itself the savage requires an explanation, and this he makes for himself, or receives from tradition, in the shape of a *myth*. But the fact is that no one theory can be expected to explain the origin of all myths, and it is impossible to deny that while some may be pure products of imagination, tales invented by early bards or minstrels to beguile a weary hour, in others fragments of real history may be hidden.

Mytilene or MITYLENE (mit-i-lē'nē), a town in the island of Lesbos. *Lesbos.*

Myxœdema (mik-sō-dē'ma), the name generally accepted for a diseased condition due to loss of function of the thyroid gland, occurring in adults, generally women, characterized by a thickening of the subcutaneous tissue, most noticeable in the face (which becomes swollen and expressionless) and the hands, with a simultaneous dulling of all the faculties and slowing of the movements of the body. Myxœdema is very slow in its progress. In 1890–91 Horsley and others treated cases successfully by grafting in the thyroid gland of a calf, or by injecting the juice of animal thyroids. Since then remarkable success has been attained by giving the patients calves' thyroids to eat, or administering the extract by the mouth.

Myxomycetes (mik-sō-mī-sē'tēs), a class of very simple cryptogamic plants known as thallophytes. They live on damp surfaces exposed to air, especially on rotting wood, and feed on organic débris. They form composite masses or plasmodia, in which numerous units are fused, or in rare cases simply combined in close contact. On the margins of such a mass amœboid processes of living matter flow in and out, with streaming internal movement, and the plasmodium spreads towards moisture, food and warmth, or away from the light

N

N, the fourteenth letter and eleventh consonant of the English alphabet; formed by placing the point of the tongue against the root of the upper teeth and forcing out the breath. It is classed as a nasal, a lingual, and liquid or semivowel. In English and most other languages *n* has a pure nasal sound; in French and Portuguese, after a vowel in the same syllable, as *on*, *un*, etc., it has the effect of giving a seminasal sound to the vowel preceding, that is to say, the vowel is sounded by an emission of the breath partly through the nose and partly through the mouth. The Spanish alphabet has a character *ñ*, called *n* with the *tilde*, as in *España*, pronounced like *ni* in *onion*, *minion*; *gn* in Italian is pronounced in the same way.

Naas (näs), a town in Ireland, County Kildare, 17 miles southwest of Dublin, an ancient place, once the residence of the kings of Leinster. Pop. 3836.

Nabathæans (na-ba-thē'ans), a Semitic race of people who from the fourth century B.C. to about 100 A.D. held a position of importance in Arabia Petræa and the adjacent regions. They were ruled by kings; their capital was Petra, and they carried on a great caravan trade.

Nábha (näb'ha), one of the Punjab native states of India, having an area of 966 square miles, with a population of 297,949. The chief town is Nábha, which has a pop. of 18,468.

Nabis (nā'bis), a Spartan who succeeded in making himself king of Sparta in B.C. 207, and reigned with great tyranny and cruelty. He was defeated by Philopœmen at the head of the army of the Achæan League, and was at last killed in Sparta by his own allies, the Ætolians, whom he had called in to his assistance (192 B.C.).

Nablus (nä-blös'), or NABULUS, a town of Palestine, capital of Samaria. 30 miles north of Jerusalem. It is beautifully situated among gardens, orchards and fertile fields, along the base of Mount Gerizim. It is the principal residence of the descendants of the ancient Samaritans, and has some manufactures and a considerable trade. The chief objects of attraction to pilgrims are the tombs of Joshua and Joseph, and Jacob's Well, 3 miles south, on the road to Jerusalem. Pop. estimated at 25,000.

Nabob (nā'bob; a corruption of *nawab*, the plural of *naib*, a deputy), in India, formerly the title of a governor of a province or the commander of the troops; borne, however, by many persons as a mere titular appendage.

Nabonassar (nab-o-nas'ar), a king of Babylon, with whose reign begins an epoch called the *Era of Nabonassar*. It began on February 26, 747 or 746 B.C.

Nacre. See *Mother-of-pearl*.

Nadir (nā'dir), in astronomy, that point of the heavens which is diametrically opposite to the zenith, or point directly over our heads. The zenith and nadir are the two poles of the horizon.

Nadir Shah (nā'dēr shä), King of Persia, a famous conqueror and usurper, was born in 1688. Having distinguished himself against the Afghans and Turks he acquired the chief power in Persia in 1732, seized the shah, confined and deposed him, and proclaiming his son Abbas, then an infant, in his stead, assumed the title of regent. The young king dying in 1736, Nadir seated himself on the throne as shah. Being invited by some conspirators about the person of the Great Mogul to undertake the conquest of India, he began his march at the head of 120,000 men, and with little resistance reached Delhi in March, 1739. Being exasperated by some tumults on the part of the inhabitants he caused a general massacre, in which upwards of 100,000 persons perished. After this barbarity the victor concluded a peace with the Mogul, whose daughter he married, receiving with her, as a dowry, some of the finest provinces of his empire contiguous to Persia. In this expedition it is supposed that he carried away, and distributed among his officers, valuables to the amount of $500,000,000.

On his return he waged war with equal success against neighboring princes, and at the height of his power his dominions stretched from the Indus and the Oxus to the Euphrates and the Caspian. A conspiracy having been formed against him by the commander of his bodyguard and his own nephew, he was assassinated in his tent in 1747, his nephew, Ali Kuli, succeeding to the throne.

Nadiyá (nad'ē-yä), or NUDDEA, a district in the lieutenant-governorship of Bengal, with an area of 2793 square miles. The Padma or Ganges flows along its northeastern boundary, and other offshots of the great river skirt or flow through the district. Pop. 1,667,491. The chief town is Nadiyá, on the Bhagirathi, a place of sanctity, and seat of indigenous Sanskrit schools. Pop. 10,880.

Naefels (nä'fels), a village in the canton of Glarus, Switzerland, a few miles north of the capital (Glarus), the scene of one of the most famous of Swiss battles, when 1500 men of Glarus defeated a force of from 6000 to 8000 Austrians (1388). Pop. 2525.

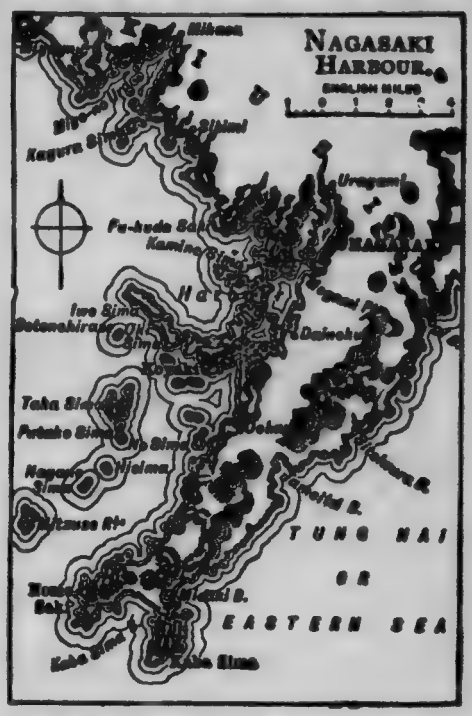
Nævius (nē'vi-us), CNEIUS, an early Roman poet, born in Campania between 274 and 264 B.C. He wrote tragedies and comedies after the model of the Greek, and an epic poem upon the Punic war. By the introduction of some of the Roman nobility into his comedies he provoked their anger, was banished from the city, and retired to Utica. He died B.C. 204 or 202. Fragments only of his works have come down to us.

Nævus (nē'vus), or 'MOTHER'S MARK,' a disfigurement which occurs most frequently on the head and trunk, but may also appear on the extremities. It consists essentially of an enlargement of the minute veins, or venous capillaries, which are dilated, and anastomose or unite among themselves to form a vascular patch generally of a deep-red color. The familiar name of 'mother's mark,' or 'longing mark,' is applied from the popular belief that the lesion was the result of fear, fright, unnatural longing, or some such irritation acting upon the mother's constitution, and communicating its effects to the unborn child in the shape of this mark.

Naga Hills (nä'gä), a district of Assam. Area 3070 square miles. It consists largely of unexplored mountain and jungle. The tribes are very unruly, and numerous outrages have called for the intervention of the British government. Pop. 102,402.

Nágapatnam. See *Negapatam.*

Nagasaki (nä'ga-sä'kē), or NANGASA'KI, a city and port in Japan, on the west coast of the island of Kiusiu, beautifully situated on a peninsula at the extremity of a harbor, affording excellent anchorage, and inclosed by hills, up the sides of which a portion



of the town extends. Nagasaki was one of five Japanese ports opened in 1858 to the British and Americans, having been previously open to the Dutch; and in 1869 it and seven others were opened to foreign nations generally. The exports are copper, silk, camphor, tobacco, porcelain, lacquered wares, etc. Pop. 160,600

Nagina (na-gē'na), a town of Hindustan, in Bijnor district, Northwestern Provinces. Pop. 21,412.

Nagoya (nä-go'yä), a large city of Japan, island of Hondo, on the bay of Owari, 170 miles W. S. W. of Tokio. Has large manufactures. Pop. 447,881.

Nágpur (näg'pör), or NAGPORE, a town in India, capital of the Central Provinces, and of the division of Nagpur (area, 23,521 square miles; pop. 3,728,063), 440 miles E. N. E. of Bombay. It occupies a low, swampy flat, and is little better than a vast assemblage of huts straggling or huddled together in the most irregular manner. The municipal

area includes Sitabaldi Hill, where the British residency with a small cantonment is situated. There are other cantonments at Takli, 2 miles distant, and at Kampthi, the chief one, 9 miles distant. The manufactures include cotton and woolen cloths, and utensils of copper, brass, and other alloys. A bed of coal, estimated to contain 17,000,000 tons, at a depth of 200 feet, has been discovered at Nâgpur. There is a trade in opium, hemp, and above all, in cotton, for which this is a great mart. Nâgpur was formerly the seat of a line of rajahs, which became extinct in 1853, when their territory was annexed to the British dominions. Pop. (1911) 101,413.

Nagy (nâd'y'), a Hungarian word meaning 'great,' occurring in a number of place-names. The chief are: (1) NAGY-KAROLYI, a town in the northeast of Hungary, with manufactures of woolens, linens, etc. The castle of Count NAGY-KAROLYI, a town in the northeast of Hungary, with manufactures of woolens, linens, etc. The castle of Count Károlyi is here. Pop. 15,382.—(2) NAGY-KIKINDA, 35 miles southwest of Szegedin. Pop. 24,843.—(3) NAGY-LAK, in the Maros. Pop. 13,631.—(4) NAGY-SZALONTA (sâ-lon'tâ), about 20 miles southwest of Gross-Wardein. Pop. 14,107. See also *Körös*.

Nahum (nâ'hum), one of the twelve minor prophets, the author of a book of prophecies included in the Old Testament. His prophecies relate to the destruction of Nineveh, which he describes in vivid colors. The period in which he lived is, however, uncertain, probably 700-600 B.C.

Naia. See *Naja*.

Naiadæ (nī'a-dē), a nat. order of endogens, consisting of plants living in fresh or salt water in most parts of the world, having cellular leaves with parallel veins and inconspicuous hermaphrodite or unisexual flowers. *Zostera marina* (the grass-wrack) is the most familiar example.

Naiads (nī'adz), in the Greek mythology, nymphs of fountains and brooks, of similar character to the dryads, oreads, etc., analogous to the nixies of the northern mythology.

Naïdidæ (na-id'i-dē), a family or group of water worms, some of them of common occurrence in the mud of ponds and streams.

Nails (nālz), small pointed pieces of metal, generally with round or flattened heads, used for driving into timber or other material for the purpose of holding separate pieces together. They are of many different lengths and shapes. *Brads* used for nailing floors and ceilings have the head only on one side; the small sharp nails with round flat heads, used by saddlers and upholsterers, are called *tacks;* the small sharp taper nails without heads, used by shoemakers, are called *sprigs;* a variety in which the head is large and the spike small are called *hob-nails;* very large nails are called *spikes*. Until a comparatively recent period almost every kind of nail was produced by hand labor alone, each nail being separately forged from a thin rod of iron. These *wrought* nails are preferable, for many kinds of carpenter work, to those made by machinery. Making of wrought nails retains, in many places, the character of a domestic manufacture, the workman being often assisted by the female members of his family. In 1810 a machine was contrived by which nails could be cut from an iron sheet, and headed at one operation, at the rate of 100 per minute. This method was improved until some mills could turn out nails at the rate of 10 million an hour. More recently a method of making nails out of wire has been adopted and the old style cut nails have gone out of use.

Nails, or ANIMALS, like hairs, are appendages which belong to the category of the exoskeletal elements of the animal frame, or as parts of the skin, of the outer layer of which they are modified appendages. A nail, in fact, is a specialized arrangement of the cells of the epidermis. In man the nails do not inclose the ends of the digits; but in the horse, and 'hoofed' or ungulate quadrupeds generally, the nails assume the form of protective coverings to the digits, and are then known as 'hoofs.' Nails may be produced to form 'claws,' as in birds and carnivorous mammals, while in the sloths they assume a large relative size, and are used as a means in arboreal progression. In the Amphibia—as in some toads, efts, etc.—the nails appear as mere thickenings of the skin at the extremities of the digits. The nails appear about the fifth month of fœtal or embryonic life.

Nain (nān), a town 8 miles from Nazareth, 42 from Jerusalem, at the foot of Mount Hermon, celebrated as the place where Christ restored a dead man to life. The town has now dwindled into a small hamlet named Nein.

Nairn (nārn), a small county in the northeast of Scotland, on the Moray Firth, with an area of 195 sq. miles. The south part of the county is hilly, and composed of gneiss and granite rocks; the lower valleys are occupied by

the Old Red Sandstone, and are of a more fertile nature. The principal rivers are the Findhorn and the Nairn, both having their sources in the county of Inverness, and flowing in nearly parallel courses, S. S. W. to N. N. E. Pop. 9155.—NAIRN, the county town, is the royal burgh and seaport near the mouth of the river of the same name. Its harbor is accessible only to small vessels. Fishing is carried on to a considerable extent, and Nairn is rising into repute as a watering-place. Pop. 5089.

Nairne (nârn), CAROLINE OLIPHANT, BARONESS, a Scottish poetess, belonging to the Oliphants of Gask, born 1766; married to William Murray Nairne, who in 1824 became Baron Nairne; died in 1845. She was the authoress of some exceedingly popular songs, including *The Laird o' Cockpen*, *The Land o' the Leal*, *The Auld House*, etc.

Naja (nä'jä), a genus of serpents, including several that are among the most dangerous of all the venomous snakes. The best known examples of the genus are *N. tripudians*, the cobra de capello of India, and the *N. haje* of Egypt, which is tamed by native jugglers, and is identified by many writers with the asp employed by Cleopatra to bring about her death. See *Cobra*, *Asp*.

Nakhichevan (nä-hich'e-vän) is the name of two towns in Russia. The first is situate on the right bank of the Don, in the government of Ekaterinoslav, 7 miles east of Rostoff. It is well and regularly built, chiefly in the oriental style. Pop. 30,883.—2. A town in the government of Erivan, near the left bank of the Aras, 175 miles south of Tiflis, regularly and substantially built. An Armenian tradition says Noah was its founder, and a mound of earth is still pointed out as his grave. Pop. 8845.

Namaqualand (nä-mä'qwä-land), GREAT, an extensive region in South Africa, extending along the west coast from the Orange River to Walfish Bay, and inland from the west coast to the Kalahari Desert; estimated area, 100,000 square miles. The greater part of this region is bare and barren, but in part it is favorable for the rearing of cattle. Copper ore appears to be in abundance in several localities. The lion, giraffe, rhinoceros, and hippopotamus, the gemsbok, eland, and other large antelopes are still found here. Germany took possession of Great Namaqualand in 1884. See *Namaquas*.

Namaqualand, LITTLE, an electoral division of Cape Colony south of the Orange River. It is a dry and barren region, but derives some importance from its copper mines. The chief mining station is Ookiep, 90 miles from Port Nolluth, with which it is connected by rail. Pop. about 17,000.

Namaquas (nä-mä'qwäs), the name given by Europeans to the Hottentot tribes inhabiting Great Namaqualand. They lead a half-pastoral, half-predatory life, yielding allegiance to a number of petty chiefs. Polygamy is universal among them. They are gradually disappearing before the Griquas and other mixed races. Missionaries have been laboring among them for some time.

Namaycush (nam'ä-cush), the great lake trout (*Salvelinus namaycush*), a favorite food fish of the Great Lakes and other northern United States lakes. It grows to 3 feet in length and weighs from 20 to 40 pounds, and is a gamey fish and excellent eating. Also known as Mackinaw trout, bear trout, and other local names.

Names (nämz), PERSONAL. It is probable that at first all names were significant. Old Testament names are almost all original, that is, given in the first instance to the individual bearing them, and either originated in some circumstance of birth or expressed some religious sentiment, thus—Jacob (supplanter), Isaiah (salvation of Jehovah), Hannah (favor), Deborah (bee), etc. Neither the Hebrews, Egyptians, Assyrians, Babylonians, Persians, nor Greeks had surnames; and in the earliest period of their history the same may be said of the Romans. In course of time, however, every Roman citizen had three, the *prænomen* or personal name, the *nomen* or name of the gens or clan, lastly, the *cognomen* or family name, as Publius Cornelius Scipio. Conquerors were occasionally complimented by the addition of a fourth name or *agnomen*, commemorative of their conquests, as Publius Cornelius Scipio *Africanus*. Greek names refer to the personal appearance or character; and were often supplemented by the occupation, place of birth, or a nickname. Times of great public excitement have had a very considerable influence in modifying the fashion in names. It is impossible to state with any degree of certainty when the modern system of personal nomenclature became general. Surnames were introduced by the Norman adventurers, but were for centuries confined to the upper classes. They became general in Scotland about the twelfth century. In some of the wilder districts of Wales they can hardly be said to have been adopted even yet. The principal sources from

which surnames are derived are personal characteristics (Black, Long, Short), rank, profession, or occupation (Bishop, Knight, Miller), localities, or natural objects (Hill, Dale, Stone), and patronymics (Johnson, Wilson, Andrews). The Hebrews had no surnames proper, but to distinguish two men of the same name they used such forms as Solomon ben David ('Solomon son of David'). The Welsh use the word ap in the same way; Evan ap Richard ('John son of Richard'= Prichard). The Scotch use Mac for the same purpose. In Irish O' signifies grandson or descendant. The same method prevailed in some European nations, as Fitz, in old Norman, signifying son. The addition of the word son at the end of a family name has left its mark in many modern names. In most of the modern nations the wife changes her surname on marriage to that of her husband; in Spain, however, she retains it, while the son may adopt either the paternal or maternal name. It is well settled in the United States, also in Great Britain, that no process of law is necessary to effect a change of personal name, the names originally not being given by law, but established by usage.

Namur (nȧ-mür); Flemish, *Namen*), a town of Belgium, capital of province of same name, situate at the confluence of the Meuse and Sambre, and at the foot of a bold promontory, strongly fortified. Sieges and bombardments had robbed the town of most of its ancient buildings, even before the European war (*q. v.*). The strategical position of Namur is highly important, and a series of nine detached forts replaced the old castles of its dukes. With the aid of these forts the Belgians maintained a stubborn resistance to the German armies which invaded the country in August, 1914. The German attack on Namur began on August 21, but it took three crucial days to reduce five of the nine forts and permit advance—three of the most important days of the war. The town had a population in 1910 of 31,940. The province, which has an area of 1413 square miles, is well watered by the Meuse, with its affluents, the Lesse and the Sambre. Agriculture and coal mining are the principal industries. Pop. 362,846.

Nanaimo (na-nā'mō), a port on the east side of Vancouver Island, where there are important coal-mines. Pop. (1911) 8306.

Nana Sahib, the murderous leader of the Sepoys in the Indian mutiny. He was born in 1825, and adopted by the ruler of the Mahratta, state of Bithoor. On the death of the latter the British government refused to recognise Nana's claim to the succession. In May, 1857, there was a mutiny of the Sepoys in Cawnpore, and Nana placed himself at the head of the mutineers. The Europeans in Cawnpore capitulated on a promise that they should be sent down the Ganges in safety. But the men were all shot down and the women and children massacred. (See *Cawnpore.*) Nana was defeated by Sir H. Havelock, and was driven across the frontier into Nepaul. But there all knowledge of him ceases. The general opinion is that he escaped into Central Asia.

Nancy (nän-sē), a town of France, capital of the dep. Meurthe-et-Moselle, situated in a fertile plain, near the left bank of the Meurthe. It is divided into the old and the new town and several suburbs, and has wide and straight streets, handsome squares, and fine promenades, a triumphal arch, numerous statues, the palace (partly old)

Doorway of Ducal Palace, Nancy.

of the former dukes of Lorraine, an elegant specimen of Flamboyant Gothic, cathedral, several interesting churches, etc. The Church of St. Epure, recently com-

pleted, is very large, and is accounted one of the finest specimens of modern Gothic in France. Nancy is the see of a bishop, and has a university (with four faculties), a public library, a museum of paintings, botanical gardens, etc. The manufactures consist of broadcloth and other woolen stuffs: cotton spinning and weaving; hosiery, lace, all kinds of embroidery, stained paper, etc. The trade is extensive. At Nancy, in 1477, was fought the great battle between René, duke of Lorraine, and Charles the Bold of Burgundy, who was defeated and slain. From 1870 to 1873 Nancy was occupied by Germans. Pop. (1911) 119,949.

Nandu (nan'dō), the South American ostrich, a bird of the genus *Rhea*. See *Rhea*.

Nangasaki. See *Nagasaki*.

Nankeen (nan-kēn'), or NANKIN', a sort of cotton cloth, usually of a yellow color, originally manufactured and imported from Nanking in China. The peculiar color of these cloths is natural to the cotton (*Gossypium religiosum*) of which they are made. Nankeen is now imitated in most other countries where cotton goods are woven.

Nanking (nän-king'; that is, 'Southern Capital,' as opposed to Peking, 'Northern Capital'), a city of China, capital of the province of Kiangsu, near the right bank of the Yangtse-Kiang, 130 miles from its mouth and 560 miles south by east of Peking, with which it communicates by the Imperial Canal. It is 18 miles in circumference, and is surrounded by a wall generally above 40 feet high. It was at one time the capital of the Chinese Empire; but when the seat of government was transferred to Peking, about the end of the fourteenth century, it lost its importance and a great part of its population. Although an open river port few foreigners are resident. It was at Nanking that the British compelled the Chinese to submit to their terms of peace in 1842. Pop. estimated at 267,000.

Nanosaurus (nan-o-sa'rus), NANOSAUR, a fossil lizard-like animal belonging to the group Deinosauria, discovered in North America, and about the size of a cat.

Nansen (nan'sen), FRIDTJOF, an Arctic explorer, was born in Norway in 1861. In 1888-89 he crossed Greenland in its lower section; on his return he published a number of scientific works. Under the auspices of the Norwegian government he sailed in 1893 from Christiana in the *Fram* (a specially built vessel) to attempt the discovery of the North Pole by allowing his vessel to freeze in the ice and drift northward. On March 14, 1895, in lat. 83° 59', he and Lieut. Johansen proceeded north on sledges, and on April 8th reached 86° 14' N. and long. 95° E. being 2° 50' nearer the pole than any previous explorer. On his return he delivered lectures in the United States and Great Britain, which were received with enthusiasm.

Nantes (nants; Fr. *nänt*), a town of France, on the Loire. The place is noted for the beauty of its streets and public buildings, and its quays line the banks of the rivers for nearly 2 miles. The public edifices most deserving of notice are the cathedral, in the Flamboyant style, dating from the fifteenth century, and containing many fine monuments; the castle, an edifice of the fourteenth century partly modernized in the sixteenth, with massive round towers; the Hôtel de Ville, the exchange, the theater, museum of natural history, picture gallery, the courts of justice and the Hôtel Dieu or infirmary. The chief industries are shipbuilding, and the manufacture of ships' boilers and machinery, linens, cottons, sail-cloth, flannel, chemicals, leather, ropes, soap, etc. Nantes is a flourishing seaport; but part of the foreign trade centers in St. Nazaire, at the mouth of the Loire. Before the conquest of Gaul by the Romans Nantes was a place of some note. For a long time it formed one of the most valuable possessions of the dukes of Brittany; but in 1499 the heiress of the dukedom, Anne of Brittany, having here married Louis XII, it passed with the rest of her possessions to the crown of France. In 1793 it was the scene of some of the most atrocious massacres of the French revolution, the *Noyades* or drownings of the monster Carrier being perpetrated here. Men, women and children were destroyed also by shooting. As many as 600 persons are known to have perished in one day, and it is estimated that in the town and surrounding country 30,000 people were destroyed. Pop. (1911) 170,585.

Nantes, EDICT OF, was signed by Henry IV in that city, April 30, 1598. It allowed the Protestants the free exercise of their religion, and threw open to them all offices of state. This edict was formally revoked by Louis XIV, on October 20, 1685. As a consequence of this fatal act for France about 400,000 Protestants emigrated to Britain, Holland and other Protestant countries.

Nanticoke (nan'ti-kōk), a town of Luzerne county, Pennsylvania, 8 miles W. S. W. of Wilkes-Barre. Mining anthracite coal is its chief busi-

ness. It has silk mills, cigar and hosiery factories. Pop. 18,877.

Nantucket (nan-tuk'et), an island of Massachusetts, 18 miles south of Cape Cod, 15 miles long and from 3 to 4 miles wide. The town of Nantucket is situated on the north side of the island, and has a deep and secure harbor. The climate is mild in winter and cool in summer, and the island has of late become a favorite summer resort. Pop. 3006.

Nantwich (nant'wich), a market town of England, in Cheshire, on the River Weaver, 19 miles southeast of Chester City and 4 miles southwest from Crewe. There is a fine cruciform church. It was once famous for its salt works, but at present its staple manufacture is boots and shoes. Pop. 7816.

Nanuk (nan'uk), the founder of the Sikh religion, born near Lahore in 1469. He taught men to worship the One Almighty Invisible God, to live virtuously, and to be tolerant of the failings of others. He died in 1539.

Napa (nä'pa), a city, county seat of Napa County, California, on the Napa River, 39 miles N. by E. of San Francisco. There are mineral springs in the vicinity, and the city has tanneries, manufactories of shoes, gloves, boxes, shirts, etc.; fruit-packing plants and wineries. Pop. 5791.

Naphtali (naf'tä-li; Hebrew, 'my wrestling'), the sixth son of Jacob, and the head of one of the twelve tribes. The tribe had its full share in repelling the incursions of the Canaanites during the first centuries of the conquest, but disappears from history when Tiglath-pileser overran the north of Israel and bore away the whole of the population to Assyria. Under the title of Galilee the district occupied by the tribe became in New Testament times more famous than it had ever been before.

Naphtha (naf'tha, naf'tha), a term which includes most of the inflammable liquids produced by the dry distillation of organic substances. *Mineral or native naphtha*, or *petroleum*, is an inflammable liquid which is found in very many countries, but especially in California, and other American States and at Baku on the Caspian Sea. It consists of a mixture of hydrocarbons chiefly belonging to the paraffin series, but it also contains members of the olefine and of the benzine series. *Boghead naphtha*, which is also known as *photogen* and *paraffin oil*, is obtained by distilling certain minerals allied to coal, such as the Torbane Hill mineral or Boghead coal, found at Bathgate in Scotland. *Coal naphtha* is obtained by the distillation of coal-tar. After the *light oil* has been separated it is shaken with caustic soda and afterwards with sulphuric acid. The liquid portion is then run off and rectified. *Shale naphtha* is a mixture of paraffins obtained by distilling bituminous shales. When petroleum is distilled, that portion which distills below 76° C. is sold as *petroleum spirit* or *petroleum ether*, and is used for dissolving India-rubber and making varnishes. The next fraction of the distillate is sold under the names benzoline, paraffin oil, or mineral sperm oil. Benzine occurs in petroleum, but is more abundant in the light oil obtained in distillation of coal-tar. Nitro-benzine is largely employed in the preparation of aniline.

Naphthalene (nap'tha-lēn), a crystalline hydrocarbon with an odor of coal-gas, occasionally deposited in gas-pipes in cold weather. It is a very common product of the action of a high temperature upon substances rich in carbon; coal and wood yield it on distillation; marsh-gas, alcohol vapor, and ether vapor deposit crystals of naphthalene when passed through a red-hot tube. When coal-tar is distilled and the temperature has risen to about 200° C., the distilled liquid partly solidifies on cooling from the crystallization of naphthalene. This portion is pressed to expel the liquid part and boiled with alcohol, which deposits the naphthalene as it cools. Naphthalene red was discovered in 1867; it comes into commerce under the name of *magdala* red, in the form of a black-brown crystalline powder.

Naphthyl (naf'thil), a hydrocarbon obtained, together with other products, by heating naphthalene with a mixture of manganese dioxide and sulphuric acid diluted with twice its weight of water. *Naphthol*, or *naphthyl alcohol*, is a derivative of naphthyl. Dinitronaphthol is produced from *naphthol*, and is one of the most beautiful and permanent of yellow dyes, coloring silk and wool in all shades from light lemon to deep gold-yellow.

Napier (nä'pi-ēr), a town of New Zealand, situated on Hawke's Bay, in North Island. The district is principally a grazing one, large quantities of wool being grown. Tinned and frozen meat are also exported. Pop. 9454.

Napier (nä'pi-ēr), SIR CHARLES JAMES, a British general and administrator, born in 1782. He entered the army in 1794, and served in Ireland and Portugal, being present at Corufia, where he was wounded and taken prisoner

in 1809. In 1811, when again at liberty, he returned to the Peninsula, and served through the war, being severely wounded in several battles. In 1812 he was made lieutenant-colonel, and in the following year served in the expedition to the Chesapeake. He missed the battle of Waterloo, which took place three days before he reached the scene of action. On the peace a period of inactivity ensued, varied only by his appointment as governor of the island of Cephalonia, and by a short command of the military district of the north of England. In 1837 he was made major-general; in 1838 K.C.B. In 1841 he was appointed to the chief command in

General Sir Charles Napier.

the Presidency of Bombay, with the rank of major-general, and was shortly afterwards called to Scinde. Here he gained the victories of Meanee and Hyderabad, and was afterwards made governor of Scinde, which he administered till 1847. He had quarreled with the directors of the East India Company, but during a panic caused by the want of anticipated success in the war with the Sikhs in 1849 his services were again required, and he sailed once more for the East, as commander-in-chief of all the forces in India. Before he arrived Lord Gough had brought the Sikh war to a triumphant termination, and no special work remained for Sir Charles Napier to perform. Having returned to England he died in 1853.

Napier, Admiral Sir Charles, a British naval commander, cousin of Sir Charles James and Sir William Francis Napier, was born in 1786; died in 1860. He entered the navy as midshipman in 1799, was promoted lieutenant in 1805, and sent to the West Indies, where he served in the operations against the French. He was promoted commander by Admiral Cochrane in August, 1809, and in 1811 was employed in Portugal and along the coast of Southern Italy. In 1813 he was attached to the North American squadron, and in August of the following year he led the expedition up the Potomac River. At the conclusion of the war he was made a C.B. In 1833 he accepted the command of the Portuguese Constitutional fleet, and effected the establishment of Donna Maria on the throne. Returning to England, he was appointed in 1839 to the command of the *Powerful*, and ordered to the Mediterranean, where, on the outbreak of the war between Mehemet Ali and the Porte, and the coöperation of Britain with Russia and Austria on behalf of the latter power, Sir Charles Napier performed some of his most gallant exploits, including the storming of Sidon and the capture of Acre. Having blockaded Alexandria, he concluded on his own responsibility a convention with Mehemet Ali, by which the latter and his family were guaranteed in the hereditary sovereignty of Egypt on resigning all claim to Syria. On his return to England he was created K.C.B. In 1841 he was elected member for Marylebone. In 1847 he received the command of the Channel Fleet as rear-admiral; and in 1854, on the commencement of the Russian war, he was nominated to the command of the Baltic fleet, being now a rear-admiral. In this capacity he accomplished little beyond the capture of Bomarsund. He sat in parliament as member for Southwark from 1855 till his death. He published a series of *Letters to Lord Melville on the State of the Navy*; an account of the *War in Portugal* and of the *War in Syria*; and numerous contributions to the *United Service Magazine*.

Napier, John, Laird of Merchiston, near Edinburgh, the inventor of logarithms, was born in 1550; died in 1617. He was educated at St. Andrew's, traveled on the Continent, and ultimately settled down at the family seats of Merchiston, near Edinburgh, and Gartness, in Stirlingshire, as a recluse student. In 1614 he published his book of logarithms (*Logarithmorum Canonis Descripto*; Edinburgh, 4to). The invention was very soon known over all Europe, and was everywhere hailed with admiration by men of science. Napier followed it up, in 1617, by publishing a small treatise, giving an account of a method of performing the operations of multiplication and division by means of a number of small rods. These materials for calculation maintained for many years a place in

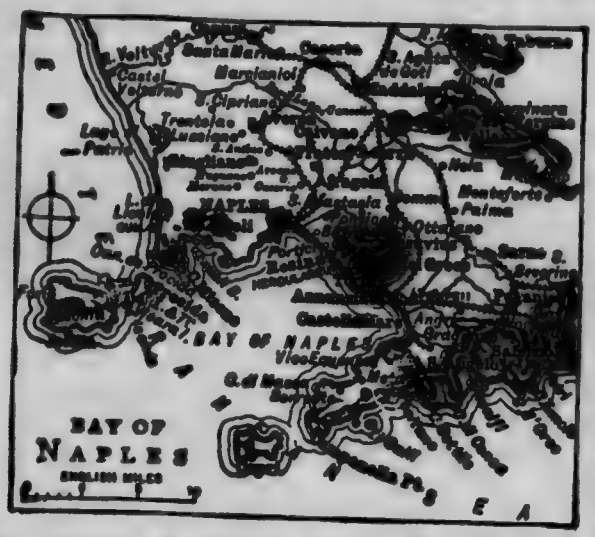
science, and are known by the appellation of Napier's Bones. His eldest son, ARCHIBALD, who succeeded him, was raised to the rank of a baron by Charles I in 1627, under the title of Lord Napier, which is still borne by his descendants.

Napier, ROBERT CORNELIUS, Baron Napier of Magdala, born in Ceylon December 6, 1810, son of Major C. F. Napier. He entered the Royal Engineers in 1826, and served in the Sutlej campaign in 1845-46, where he was severely wounded. In 1848-49 he served in the Punjab, and was chief engineer at the siege of Mooltan. He was chief of staff to Sir J. Outram in 1857, and was prominent in the relief of Lucknow at the beginning of the Indian mutiny. In the Chinese war of 1860 he commanded a division with the local rank of major-general. In October, 1867, he was intrusted with the command of the Abyssinian expedition, and captured Magdala, April 13, 1868. He was then made Baron Magdala and G. C. B. In 1870 he was made commander-in-chief in India, with the rank of general, became governor of Gibraltar in 1876, was made field-marshal in 1883, and Constable of the Tower in 1887. He died in 1890.

Napier, SIR WILLIAM FRANCIS PATRICK, a British officer, brother of Sir Charles James Napier, the conqueror of Scinde, was born in 1785; died in 1860. At the age of fourteen he entered the army, served at the siege of Copenhagen, and with his brothers Charles and George took a distinguished part in the Peninsular campaigns, became lieutenant-colonel in 1813, and colonel in 1830. Some years after the conclusion of peace he commenced his celebrated *History of the Peninsular War*, the publication of which began in 1828, and extended over the intermediate period till 1840. In 1841 Colonel Napier was advanced to the rank of major-general; he was appointed lieutenant-governor of Guernsey the following year, and in 1848 created a K.C.B. He also wrote *History of the Conquest of Scinde*, *History of the Administration of Scinde*, *Life of Sir Charles James Napier*, etc.

Naples (nā'plz; Italian, *Nap'oli*), a city in Southern Italy, the largest in the kingdom, situated on the northern shore of the beautiful Bay of Naples, about 160 miles from Rome. Its site is magnificent, being on the side of a nearly semicircular bay, partly along the shore, and partly climbing the adjacent slopes, bounded on the one side by the picturesque heights of Posilipo, and on the other by the lofty mass of Vesuvius, while the background is rich in natural beauty. The environs are densely peopled, towns and villages being numerous around the bay as well as inland. The city is divided into two unequal parts by a steep ridge proceeding from the height on which stands the castle of St. Elmo, and terminated by a rocky inlet surmounted by the Castello dell' Ovo. The largest and most ancient part of Naples lies to the S. E. of these heights. This now forms the business quarter, and is intersected from N. to S. by the main street, the Toledo, now Via di Roma. The western and more modern part of the city is the fashionable quarter, has a superior situation, and commands magnificent views. The chief street in this quarter is the Corso Vittorio Emanuele, 2½ miles in length. The city measures about 3 miles in length by 2 in breadth; the streets are mostly well-paved with lava or volcanic basalt, and the houses are large, lofty, and solidly built, and have flat roofs. There are few remains of ancient times, but there are five castles, S. dell' Ovo, Nuovo, dell Carmine, Capuano, Elmo, and the gates Porta del Carmine and Capuano, all of mediæval construction. Among the more remarkable public edifices is the cathedral, dating from 1272, a large Gothic building erected on the site of two temples dedicated to Neptune and Apollo. It is held in high veneration in consequence of possessing the relics of St. Januarius or Gennaro. Other edifices are the church De' Santi Apostoli, said to have been originally founded by Constantine the Great on the site of a temple of Mercury, and, though subsequently rebuilt, still very ancient; the church of St. Paul, built in 1817-31 in imitation of the Pantheon at Rome; the Palazzo Reale (Royal Palace, a building of great size in the lower part of the town); the palace of Capo di Monte, situated on a height in the outskirts; the old palace, where the courts of justice now hold their sittings; the Palazzo dei Publici Studj, formerly occupied by the university, but now converted into the Museo Nazionale, a museum containing not only a valuable library of 275,000 volumes and many rare MSS., but also the older and more recent collections belonging to the crown, the Farnese collection of paintings and sculpture from Rome and Parma, and an unequaled collection of gems, bronzes, vases, etc., chiefly obtained from the excavations of Pompeii and Herculaneum; numerous theaters, of which that of San Carlo is remarkable for its magnificence, and is one of the largest in existence. Naples has a university, dating from 1224, and attended by over 3000 students; many other educational institutions, and numer-

ous foundations. The manufactures, which are numerous but individually unimportant, include macaroni, woolens and cottons, silks known as *gros de Naples*, glass, china, musical instruments, flowers and ornaments, perfumery, soap, chemicals, machinery, etc. The harbor accommodation has recently been extended, and the trade is important. The exports consist chiefly of bones, cream of tartar, hoops, linseed, hemp, wheat, figs, gloves, liquorice, madder, coral, macaroni, oil, wine, wool, tallow, rags and silk, raw, dyed and manufactured. Naples is one of the most densely populated cities of Europe, and one of the most peculiar features of the city is its unique population and the universal publicity in which life is passed. In the environs are situated the tomb of Virgil, the ancient ruined cities of Herculaneum and Pompeii, the remains of Roman temples, villas, palaces and tombs, together with the physical phenomena of Vesuvius. Pop. (1911) 723,000.



History.—Naples was founded by a Greek colony from the town of Cumæ many centuries before Christ. It took the name of Neapolis ('New City') to distinguish it from a still older Greek city adjoining called *Parthenōpē*. It passed to the Romans in 290 B.C. In 536 A.D. it was taken by Belisarius, and was pillaged by Totila in 542. In 1130 the Norman Robert Guiscard united the south of Italy and the adjacent island of Sicily into one political unity and from that period the history of Naples ceases to be the history of a city, but becomes the history of a kingdom forming part of the Kingdom of the Two Sicilies, Naples being recognized as the metropolis. In the year 1189 the kingdom passed from the Norman to the Suabian race. In 1266 Charles of Anjou defeated the Suabians, and was crowned king of the Two Sicilies. The kingdom was ruled by this dynasty until 1441, when it came under the dominion of the princes of Aragon. In the early part of the sixteenth century it came into the possession of Spain, which governed it by viceroys until 1707. Under the rule of the Spanish viceroys broke out the famous insurrection under Masaniello in 1647. It was similarly governed by Austria until 1735, when it was erected into an independent monarchy in favor of Don Carlos, or Charles of Bourbon. On the latter's accession to the throne of Spain, in 1759, he was succeeded by his son Ferdinand IV. In 1798 the French republicans entered Naples, which became a republic; but a loyalist rising led to the return of the king. His reign was again interrupted in 1806, when Napoleon succeeded in placing first his brother Joseph, and on Joseph's removal to Spain, his brother-in-law Murat, on the throne of Naples. In 1815 Ferdinand regained his throne, and changed his title to Ferdinand I. Upon his death, in 1825, he was succeeded by Francis I, who died in 1830. This prince was followed by his son Ferdinand II, notorious under the nickname of *Bomba*. (See *Ferdinand I* and *II*.) He died in 1859, and his son, Francis II, was his successor. The latter continued the abuses of the old régime, and in the revolution that broke out in 1860 under the guidance of Garibaldi he was deposed, and Naples and Sicily were added to the Kingdom of Italy.

Naples, Bay of (anciently, *Crater Sinus*), on the west coast of Italy, in the Mediterranean, extending for about 35 miles from the Capo di Miseno, its N. W. boundary, to the Punta della Campanella, its S. E. limit. It is separated from the open sea by the islands of Procida, Ischia and Capri. Its shores have for ages been the scene of powerful volcanic agency, and the scenery has long been celebrated for its beauty and grandeur. Mount Vesuvius is the most striking and distinctive feature.

Naples-yellow, a pale golden-yellow pigment composed of the oxides of lead and antimony. It is employed not only in oil-painting, but also

for porcelain and enamel. Chromate of lead is sometimes used as a substitute for this color.

Napoleon I (na-pō'le-on), Emperor of the French, was born August 15, 1769, at Ajaccio, Corsica, and was the son of Charles Bonaparte, an advocate, and of Letizia Ramolino. (See *Bonaparte.*) In his tenth year he was sent to the military school of Brienne, and after a short time spent at that of Paris he received, in 1785, his commission as lieutenant of artillery. During the development of the revolution Napoleon took the popular side, but in a quiet and undemonstrative way. In 1792 he became captain of artillery, and in 1793 he was sent, with the commission of lieutenant-colonel of artillery, to assist in the reduction of Toulon, then in the hands of the British. The place was captured (December 19) entirely through his strategic genius; and, in the following February, he was made a brigadier-general of artillery. In 1795, when the mob of Paris rose against the Convention, Napoleon was made commander of the 5000 troops provided for its defense. He had only a night to make arrangements, but next morning he scattered the mob with grapeshot, disbanded the national guard, disarmed the populace, and ended the outbreak. On March 9, 1796, he married Josephine Beauharnais, and soon after he had to depart to assume the command given him of the army of Italy against the forces of Austria and Sardinia. After a series of victories, culminating in that of Lodi (May 10), Naples, Modena and Parma hastened to conclude a peace, the pope was compelled to sign an armistice, and the whole of Northern Italy was in the hands of the French. Army after army sent by Austria was defeated (at Roveredo, Bassano, Arcole, Rivoli, etc.); Napoleon carried the war into the enemy's country; and by the Peace of Campo Formio, which followed (October 17, 1797), Austria ceded the Netherlands and Lombardy, and received the province of Venetia. The pope had previously been forced to cede part of his dominions.

In December, 1797, Napoleon returned to Paris. About this time the Directory determined to invade Egypt, as a preliminary step to the conquest of British India. Napoleon was put in command of the expedition, and on July 1, 1798, he landed at Alexandria. This city fell on the 4th of July, and Cairo was taken on the 24th, after the sanguinary battle of the Pyramids. On August 4th, Nelson annihilated the French fleet in the Bay of Aboukir. All means of return to Europe for the French were thus cut off; but Napoleon having suppressed with rigor a riot at Cairo, advanced to attack the Turkish forces assembling in Syria. He took El Arish and Gaza, and stormed Jaffa. But after sixty days' siege he was compelled to abandon the attempt to capture Acre, which was defended by a Turkish garrison under Djezzar Pasha, assisted by Sir Sydney Smith and a small body of English sailors and marines. He reëntered Cairo on June 14, 1799, and on the 25th of July attacked and almost annihilated a Turkish force which had landed at Aboukir. On the 22d of August he abandoned the command of the army to Kléber, and embarking in a frigate, landed at Fréjus, France, October 9, having eluded the English cruisers. He hastened to Paris, secured the cooperation of Moreau and the other generals then in the capital, and abolished the Directory on the 18th and 19th Brumaire (November 9-10). A new constitution was then drawn up chiefly by the Abbé Siéyès, under which Napoleon was made first consul, with Cambacérès and Lebrun as second and third consuls. From this time he was virtually ruler of France.

Napoleon's government was marked by sagacity, activity and vigor in the administration of civil affairs, and so far was highly beneficial to France. But war was his element, and in 1800 he resolved to strike a blow at Austria. Having executed a daring march into Italy across the Great St. Bernard, he defeated the Austrians at Marengo, and after the decisive battle of Hohenlinden, Austria obtained peace by the Treaty of Lunéville, 1801. Treaties were subsequently concluded with Spain, Naples, the pope, Bavaria, Portugal, Russia, Turkey, and, finally, on March 27, 1802, the treaty known as that of Amiens was signed by Britain. In 1802 Napoleon was proclaimed by a decree of the senate consul for life, and in 1804 he had himself crowned as emperor, upwards of 3,000,000 votes of the people being given in favor of this measure. To this period belongs the famous body of laws known as the *Code Napoléon.* See *Code.*

In 1803 war had again broken out with Britain, and Napoleon collected an army and flotilla with the purpose of invading England. In 1805 Britain, Russia, Austria and Sweden united against Napoleon, who at once gave up his purpose of invasion, marched across Bavaria at the head of 180,000 men, and compelled the Austrian General Mack to capitulate at Ulm with 23,000 men (October 20), the day before Nelson's great victory at Trafalgar. On November 13 he entered

Vienna, and on December 2, having crossed the Danube, he completely routed the allied Russian and Austrian armies at Austerlitz. The Austrian emperor instantly sued for peace, giving up to France all his Italian and Adriatic territories. In February, 1806, a French army occupied the continental part of the Neapolitan states, of which Joseph Bonaparte was declared king on the deposition of their former sovereign. Another brother of the emperor, Louis, was made King of Holland. Various districts in Germany and Italy were erected by the conqueror into dukedoms and bestowed upon his most successful generals. This brought him into collision with Prussia, and war was declared on October 8. On the 14th Napoleon defeated the enemy at Jena, while his general, Davoust, on the same day gained the victory of Auerstädt. On the 25th Napoleon entered Berlin and issued the celebrated Berlin Decrees, directed against British commerce. He then marched northwards against the Russians, who were advancing to assist the Prussians. At Pultusk (December 28) and at Eylau (February 8, 1807) he met with severe checks; but on June 14 was fought the battle of Friedland, which was so disastrous to the Russian armies that Alexander was compelled to sue for an armistice. On July 7 the Peace of Tilsit was concluded, by which the King of Prussia received back half of his dominions, and Russia undertook to close her ports against British vessels. The Duchy of Warsaw was erected into a kingdom and given to the King of Saxony; the Kingdom of Westphalia was formed and bestowed upon Jérôme, Napoleon's youngest brother; and Russia obtained a part of Prussian Poland, and by secret articles was allowed to take Finland from Sweden. As Portugal had refused to respect the Berlin Decrees, Napoleon sent Junot to occupy Lisbon (November 30, 1807). The administrative affairs of Spain having fallen into confusion, Napoleon sent an army under Murat into that kingdom, which took possession of the capital, and by the Treaty of Bayonne, Charles IV resigned the Spanish crown, which was given to Joseph Bonaparte, Murat receiving the vacant sovereignty of Naples. The great body of the Spanish people rose against this summary disposal of the national crown, and Britain aided them in their resistance. Thus was commenced the Peninsular war, which lasted seven years. A French squadron was captured by the British at Cadiz (June 14, 1808); General Dupont surrendered at Baylen with 18,000 men (July 22); Junot was defeated by Sir Arthur Wellesley (Wellington) at Vimeira (August 21). But Napoleon rushed to the scene of action in October at the head of 180,000 men and entered Madrid in spite of all resistance by the Spaniards on December 4. The British troops, now under Sir John Moore, were driven back upon Corunna, where they made a successful stand, but lost their general (January 16, 1809). In the meantime Austria again declared war and got together an army in splendid condition under the Archduke Charles. Napoleon hurried into Bavaria, encountered the archduke at Eckmühl (April 22), and completely defeated him; on May 13 he again entered Vienna. On May 21st and 22d he was himself defeated at Aspern and Esslingen; but on July 6 the Austrians were crushed at Wagram, which enabled Napoleon to dictate his own terms of peace; these were agreed to on October 14 at Schönbrunn. On his return to Paris, Napoleon had himself divorced from Josephine, for the reason that she had borne him no children, and on April 2, 1810, he was married to the Archduchess Maria Louisa of Austria. The fruit of this union was a son. (See next article.)

The years 1810 and 1811 were the period of Napoleon's greatest power. On the north he had annexed all the coast line as far as Hamburg, and on the south Rome and the southern Papal provinces. But now the tide began to turn. Russia showed a disinclination to carry out the continental blockade and give effect to the Berlin Decrees; so, in May, 1812, Napoleon declared war against that country, and soon invaded it with an army of about 500,000 men. The Russians retired step by step, wasting the country, carrying off all supplies, and avoiding as far as possible general engagements. The French pushed rapidly forward, defeated the Russians at Borodino and elsewhere, and entered Moscow only to find the city on fire. It was impossible to pursue the Russians farther, and after waiting for some time in Moscow in vain hope of a proposal of peace from the Russian emperor, nothing remained but retreat. The winter proved uncommonly severe, and swarms of mounted Cossacks incessantly harassed the French, now sadly demoralized by cold, famine, disease and fatigue. Of the invaders only about 25,000 succeeded in escaping from Russia. Napoleon immediately ordered a fresh conscription, but the spirit of Europe was now fairly roused. Another coalition, consisting of Prussia, Russia, Great Britain, Sweden and Spain, was formed,

which, early in 1813, sent its forces towards the Elbe. Napoleon had still an army of 350,000 in Germany. He defeated the allies at Lützen, at Bautzen, and at Dresden; but the last was a dearly-bought victory for the French, who were now so outnumbered that their chief was compelled to fall back on Leipsig. There he was hemmed in, and in the great 'Battle of Nations,' which was fought on the 16th, 18th and 19th of October, he was completely defeated. He succeeded in raising a new army, and from January to March, 1814, he confronted the combined hosts of the allies. But numbers were against him; and Wellington rapidly advanced upon Paris from the south. On March 30 the allies captured the fortifications of Paris, and on the 31st the Emperor Alexander and Wellington entered the city. On April 4 Napoleon abdicated at Fontainebleau. He was allowed the sovereignty of the island of Elba, with the title of emperor and a revenue of 6,000,000 francs, and Louis XVIII was restored. After a residence of ten months he made his escape from the island, and landed at Fréjus on March 1, 1815. Ney and a large part of the army joined him, and he made a triumphal march upon Paris; but it was mainly the army and the rabble that he now had on his side. The allied armies once more marched towards the French frontier, and Napoleon advanced into Belgium to meet them. On June 16 he defeated Blücher at Ligny, while Ney held the British in check at Quatre-Bras. Wellington fell back upon Waterloo, where he was attacked by Napoleon on the 18th, the result being the total defeat of the French. The allies marched without opposition upon Paris. Napoleon abdicated in favor of his son, and tried to escape from France, but failing, he surrendered to the captain of a British man-of-war. With the approval of the allies he was conveyed to the island of St. Helena, where he was confined for the rest of his life. He died in May, 1821, and was buried in the island, but in 1840 his remains were transferred to the Hôtel des Invalides at Paris.

Napoleon II, Napoleon François Joseph Charles Bonaparte, only son of the preceding, was born in Paris in 1811; died at Schönbrunn in 1832. In his cradle he was proclaimed King of Rome. On the first abdication of the emperor he accompanied his mother, Maria Louisa of Austria, to Vienna. His title there was Duke of Reichstadt. He never assumed the title of Napoleon II; but on the accession of his cousin Louis Napoleon in 1852, some title being necessary, the late emperor took that of Napoleon III, which being recognized by the governments of Europe, implied the recognition of the former title.

Napoleon III, Charles Louis Napoleon Bonaparte, Emperor of the French, was born at Paris in 1808; died at Chislehurst, England, in 1873. He was the youngest son of Louis Bonaparte, brother of Napoleon I and King of Holland, and of Hortense de Beauharnais. His early life was spent chiefly in Switzerland and Germany. By the death of his cousin, the Duke of Reichstadt (Napoleon II, see above), he became the recognized head of the Bonaparte family, and from this time forward his whole life was devoted to the realization of a fixed idea that he was destined to occupy his uncle's imperial throne. In 1836 an attempt was made to secure the garrison of Strasburg, but the affair turned out a ludicrous failure. The prince was taken prisoner and conveyed to Paris, and the government of Louis Philippe shipped him off to the United States. The death of his mother brought him back to Europe, and for some years he was resident in England. In 1840 he made a foolish and theatrical descent on Boulogne; was captured, tried, and sentenced to perpetual confinement in the fortress of Ham. After remaining six years in prison he escaped and returned to England. On the outbreak of the revolution of 1848 he hastened to Paris, and securing a seat in the National Assembly he at once commenced his candidature for the presidency. On the day of the election, December 10th, it was found that out of 7,500,000 votes Louis Napoleon had obtained 5,434,226; Cavaignac, who followed second, had but 1,448,107. On the 20th the prince-president, as he was now called, took the oath of allegiance to the republic. He looked forward to a higher position still, however, and pressed for an increase of the civil list from 600,000 francs first to 3,000,000, then to 6,000,000, with his term of office extended to ten years, and a residence in the Tuileries. At last, on the evening of December 2, 1851, the president declared Paris in a state of siege, a decree was issued dissolving the assembly, 180 of the members were placed under arrest, and the people who exhibited any disposition to take their part were shot down in the streets by the soldiers. Another decree was published at the same time ordering the reëstablishment of universal suffrage, and the election of a president for ten years. When the vote came to be taken, on the 20th and 21st of the same

month, it was discovered that 7,439,216 suffrages were in favor of his retaining office for ten years, with all the powers he demanded, while only 640,737 were against it. As soon as Louis Napoleon found himself firmly seated he began to prepare for the restoration of the empire. In January, 1852, the National Guard was revived, a new constitution adopted, and new orders of nobility issued; and at last, on December 1, 1852; Louis Napoleon Bonaparte was proclaimed emperor under the title of Napoleon III. On January 29, 1853, the new sovereign married Eugénie Marie de Montijo, countess de Teba; the result of this union being a son, Napoleon-Louis, born March 16, 1856. In March, 1854, Napoleon III, in conjunction with England, declared war in the interest of Turkey against Russia. (See *Crimean war.*) In April, 1859, hostile relations developed between Austria and Sardinia, and Napoleon took up arms in support of the Sardinian cause. The allies defeated the Austrians at Montebello, Magenta, Marignano and Solferino. By the terms of the Peace of Villafranca Austria ceded Lombardy to Italy, and the provinces of Savoy and Nice were given to France in recognition of her powerful assistance (March 10, 1860). In 1860 the emperor sent out an expedition to China to act in concert with the British; and in 1861 France, England and Spain agreed to despatch a joint expedition to Mexico for the purpose of exacting redress of injuries, but the English and Spaniards soon withdrew. The French continued the quarrel, and an imperial form of government was initiated, Maximilian, archduke of Austria, being placed at its head with the title of emperor. Napoleon, however, withdrew his army in 1867 in response to the stern demand of the United States, and the unfortunate Maximilian, left to himself, was captured and shot. On the conclusion of the Austro-Prussian war of 1866 Napoleon, jealous of the growing power of Prussia, demanded a reconstruction of the frontier, which was peremptorily refused. The ill feeling between the two nations was increased by various causes, and in 1870, on the Spanish crown being offered to Leopold of Hohenzollern, Napoleon demanded that the King of Prussia should compel that prince to refuse it. Notwithstanding the subsequent renunciation of the crown by Leopold war was declared by France (July 19, 1870). (See *Franco-German war.*) On July 28, Napoleon set out to take the chief command, but his forces were illy prepared and were everywhere defeated, with the result that, on September 2, the army with which he was present was compelled to surrender at Sedan. One of the immediate consequences of this disaster was a revolution in Paris. The empress and her son secretly quitted the French capital and repaired to England, where they took up their residence at Camden House, Chislehurst. Here they were rejoined by the emperor (who had been kept a prisoner of war for a short time) in March, 1871, and here he remained till his death. His only child, the prince imperial, who had joined the British army in South Africa as a volunteer, was killed by the Zulus, June 2, 1879.

Napoleon, a card game played by two or more players, each of whom receives five cards. It is usually played for money, a fixed stake per trick being agreed on. When the player at the left of the dealer examines his cards he either declares to win one, two, three, four, or five tricks—the latter called 'going nap'; or he 'passes,' i.e., declines to play, being accordingly out of that game. If he declares any number of tricks less than five, the next player in order has an opportunity of declaring or passing, the one who declares the highest number of tricks being always the one who has to play. The first card played determines that trumps are to be of that suit for the game. Should the player declaring succeed in winning his number of tricks he receives a corresponding sum from each player, and the game recommences; should he fail, he has to pay to each player a sum corresponding to the number of tricks.

Napoléon-Vendée. See *Roche-sur-Yon.*

Napoli de Romania, or NAUPLIA (nä'pli-a), a seaport town of Greece, 28 miles S. S. W. of Corinth. The Bay of Nauplia has excellent anchorage, and there is a good harbor for small vessels. Pop. 5865.

Napu (nä'pū), a very small, peculiarly elegant musk-deer (*Tragulus napu*) inhabiting Java and Sumatra.

Narbada. See *Nerbudda.*

Narbonne (när-bon; Latin, *Narbo Martius*), a town of Southern France, department of Aude, situated in a wine-growing plain, 5 miles from the Mediterranean. It has dark, winding streets, a fine church (the choir only completed), a Gothic structure founded in 1272; and a castellated town-hall, formerly an archbishop's palace. The manufactures are not important. The honey of Narbonne is celebrated. Narbonne was the first colony which the

Romans founded beyond the Alps. It became the capital of Gallia Narbonensis, but is very poor in Roman remains. Pop. (1911) 28,290.

Narcissus (när-sis'us), according to Greek mythology the son of the river-god Cephissus. The young Narcissus was of surpassing beauty, but excessively vain and inaccessible to the feeling of love. Echo pined away to a mere voice because her love for him found no return. Nemesis determined to punish him for his coldness of heart, and caused him to drink at a certain fountain, wherein he saw his own image, and was seized with a passion for himself of which he pined away. The gods transformed him into the flower which bears his name.

Narcissus, an extensive genus of bulbous plants, mostly natives of Europe, nat. order Amaryllidaceæ. The species are numerous, and from their hardiness, delicate shape, gay yellow or white flowers, and smell, have long been favorite objects of cultivation, especially the daffodil (*N. Pseudonarcissus*), the jonquil (*N. Jonquilla*), polyanthus narcissus (*N. Tazetta*), and white narcissus (*N. poeticus*). Some of the more hardy species grow wild in our woods and under our hedges.

Narcotic (när-kot'ik), derived from a Greek term signifying numbness or torpor, is the name given to a large class of substances which, in small doses, diminish the action of the nerves. Most narcotics are stimulating when given in moderate doses; in larger doses they produce sleep; and in poisonous doses they bring on stupor, coma, convulsions, and even death. Opium, hemlock, henbane, belladonna, aconite, camphor, digitalis, tobacco, alcohol, leopard's-bane, and a variety of other substances, are narcotics.

Narcotine (när'kō-tin), an alkaloid contained in opium to the amount of 6 or 8 per cent. It is poisonous in large doses, about 45 grains being sufficient to kill a cat.

Nard. See *Spikenard.*

Nardo (när'dō), a town of S. Italy, province Lecce. It has manufactures of textiles. Pop. 11,653.

Nardoo (när-dō'; *Marsilia macropus*), a clover-like acotyledenous plant of Australia, occupying extensive tracts of inundated land. Its dried spore-cases are eaten by the natives.

Nares (nārz), Sir George Strong, Arctic explorer, born in England in 1831. He entered the navy and took part in the Arctic expedition of 1852-54. He served in the Crimean war, and from 1872 to 1874 he commanded the *Challenger* during her celebrated scientific expedition, and in 1875 was first in command of a new North Polar expedition. He afterwards was engaged in a survey of the South Pacific, and was made a vice-admiral in 1892. He was the author of *Seamanship, Reports on Ocean Soundings, Voyage to the Polar Sea,* etc. He died in 1915.

Narghile, or Narghileh (när'gē-lā), a kind of Eastern tobacco pipe, the chief feature of which is that when used the smoke is made to pass through water.

Naro (nä'rō), a town of Sicily, province Girgenti. It has a trade in oil, wine and sulphur. Pop. 12,808.

Narragansett Bay (när-a-gan'set), a bay of the United States, running into Rhode Island for 28 miles. The city of Newport, near its entrance, Providence near its head, and Narragansett Pier, are well-known places of resort on its shores.

Narragansetts, a tribe of Indians which in the early history of New England occupied the part of Rhode Island w. of Narragansett Bay. They were nearly all destroyed during the King Philip's war.

Narrow Gauge, a railroad track of less width than the usual or standard gauge, of 56½ inches between the rails. The narrow gauge has been used in some places for economical reasons, especially where it was difficult to gain a full width of roadbed, but the advantage of uniformity is so great that in the United States the standard gauge is now almost everywhere used.

Narses (nar'sēs), the companion-in-arms of Belisarius, and one of the most successful generals of the Emperor Justinian, was an Asiatic slave and eunuch whom the latter had taken into favor and appointed to a command in 538 A.D. Between that period and 552 he put an end to the dominion of the Goths in Italy, and in 553 was himself appointed exarch, and fixed his court at Ravenna. He was deposed under the Emperor Justinus II, 565, and died at Rome 568.

Narsinghpur (när-sing'pōr), chief town of district of the same name, Central Provinces of India. It is an important center for the grain and cotton trade of the Nerbudda Valley. Pop. 11,233. The district has an area of 1976 square miles, and pop. 315,518.

Narthex. See *Assafœtida.*

Narva (när'va), a town of Russia, in the government of St. Petersburg and 79 miles southwest of that city,

on the Narova. Narva is celebrated for the great victory gained by Charles XII in its vicinity over the Russians in 1700. The latter retook the place by storm in 1704. Pop. (1911) 21,478.

Narvaez (när-vä'eth), RAMON MARIA, Duke of Valencia, a Spanish statesman and general, born in 1800; died in 1868. Early in life he entered the Spanish army, and he rapidly acquired distinction. When Gomez, the Carlist general, was engaged in his adventurous march through Spain, in 1836, Narvaez, who then commanded a division under Espartero, was directed to pursue him, and totally routed him near Arcos. He then devoted himself to politics, and became the rival of Espartero himself. Having taken part in an unsuccessful rising of the progressista party in 1838, he fled to France and remained there five years. In 1843 he hastened to Spain, put himself at the head of an insurrection, and entered Madrid victorious (July, 1843). In the following year he formed his first ministry, and received from Queen Isabella the rank of marshal and the title of Duke of Valencia. His government was overthrown in 1846, but he was soon recalled, and during the remainder of his life was several times entrusted with the formation of a cabinet.

Narwhal (när'hwal; *Monŏdon monocĕros*), a cetaceous mammal found in the northern seas, averaging from 12 to 20 feet in length. The body color is whitish or gray spotted with darker patches. There is no dorsal fin. The dentition of the narwhals differs from that of all other members of the dolphin family. In the female both jaws are toothless, but the male narwhal has two canines in the upper jaw, which are sometimes developed into enormous projecting tusks, though commonly only the one on the left side is so developed, being straight, spiral, tapering to a point, and in length from 6 to 10 feet. It makes excellent ivory. From the frequency with which the narwhal appears as having a single horn it has obtained the name of the *Sea-unicorn*, *Unicorn-fish*, or *Unicorn Whale*. The food of the narwhal appears to consist chiefly of mollusca, and notwithstanding its formidable armature it is said to be inoffensive and peaceable. The Greenlanders obtain oil from its blubber, and manufacture its skin into useful articles.

Narwhal.

Naseberry (näs'ber-i), the fruit of *Sapōta Achras*, one of the finest West India fruits. See *Sapota*.

Naseby (näz'bi), a village in Northamptonshire, England, 12 miles from Northampton. In 1645 Fairfax and Cromwell entirely defeated Charles I in the vicinity.

Nash, JOHN, an English architect, born in London in 1752; died in 1835. In 1815 he was made surveyor to the crown estates. He laid out Regent Park, formed Regent Street, and built the United Service Club, Haymarket Theater and Buckingham Palace, London, as also the Pavilion at Brighton.

Nash, RICHARD, known as *Beau Nash*, born at Swansea in 1674; died in 1761. He was master of the ceremonies at Bath, and for many years was sole arbiter of fashion. He died in comparative indigence.

Nash, THOMAS, an English satirist and dramatist, born at Lowestoft, Suffolk, in 1558; died in 1600 or 1601. He was graduated at Cambridge in 1584, but was afterwards expelled for satirising the authorities. After spending several years on the Continent he returned to London in 1589, and took an active part in the Martin Marprelate controversy, writing several pamphlets on the prelatical side. In conjunction with Marlowe he wrote a drama, *Dido, Queen of Carthage*, and in 1592 produced a comedy of his own, *Summer's Last Will and Testament*, which was acted before Queen Elizabeth.

Nashua (nash'ü-a), a city of New Hampshire, one of the capitals of Hillsboro Co., 35 miles south of Concord, at the junction of Merrimac and Nashua Rivers. It has several extensive cotton manufactories, also iron works, and manufactures of steam engines, locks, guns, tools, shuttles, carpets, etc. Pop. 26,005.

Nashville (nash'vil), capital of Tennessee and county seat of Davidson Co., on both banks of the Cumberland. The State Capitol is one of the best examples of pure Grecian architecture in the country. Nashville has many institutions of higher learning, including Vanderbilt University, the George Peabody College for Teachers, Ward-Belmont College, Fisk University, Roscobel College, American Inter-Church College, St. Cecilia Academy, Fisk University (col.), Walden University (col.), Roger Williams University (col.), Meharry College (col.). The city is one of the largest general lumber markets in the United States. The industries include publishing, milling, and the manufacture of stoves, hardwood flooring, phosphate fertilizer, etc. The city has commission form of government. Nashville was settled as Nashborough in 1780 by North Carolinians; incorporated as Nashville in 1784, and chartered as a city in 1806. Pop. 140,000.

Nasik (nä'sik), a district in Bombay, British India; area, 5850 square miles. Pop. 816,504. The chief town is Nasik, which ranks among the most sacred places of Hindu pilgrimage.

Nasmith (nä'smith), GEORGE G., a Canadian public health official, soldier, author, 1877-), born in Toronto. He served with the Canadian Expeditionary Forces in France, 1914-18; inventor of protective masks for poison gas, mobile filter, etc. He wrote *Canada's Sons and Great Britain in the World War, On the Fringe of the Great Fight*, etc.

Nasmyth (nä'smith), ALEXANDER, a landscape painter, born at Edinburgh in 1758; died in 1840. He went early to London, and studied under Allan Ramsay, painter to George III. He afterwards proceeded to Rome, and on his return to Edinburgh he commenced portrait painting, but soon abandoned it for landscape. His style is remarkable for its simplicity and beauty.—PATRICK, or PETER, son of the former, born at Edinburgh in 1786; died in 1831, was also a painter. Owing to an injury to his right hand he learned to paint with his left. In London, where he became very popular as a painter of English landscape, he was designated the English Hobbema.—JAMES, another son, born in Edinburgh in 1808, was educated at the School of Arts, Edinburgh, and in engineering under Maudsley in London. He removed in 1834 to Manchester, where he became a successful machine constructor and inventor. The steam hammer, which has rendered possible the immense forgings now employed, was invented by him in 1839. The steam pile driver and the safety foundry ladle are among his other inventions. He also acquired fame as a practical astronomer.

Nasr-ed-Deen (nä sr'ed-dēn), Shah of Persia, born in 1829; succeeded to the throne in 1848. In 1856 his occupation of Herat involved him in war with Britain. Subsequently the two countries were friendly, and he made three journeys to Western Europe in 1873, 1878 and 1889. He was assassinated in 1896, and succeeded by his son, Muz-affer-ed-Deen.

Nassau (nas'sa), formerly a state of Germany, now part of the Prussian province of Hesse-Nassau, seized by Prussia in 1866.

Nassau, capital of the Bahamas, island of New Providence, a handsome city, and a winter health resort for Americans and West Indians. Pop. about 10,000.

Nast, THOMAS, caricaturist, was born in Bavaria in 1840; was brought to the United States in 1846. After service in England and Italy he began drawing war sketches for *Harper's Weekly* in 1862. In his particular line, pictorial satire, Nast stands in the foremost rank. He died in 1902.

Nasturtium (nas-tur'shi-um), or Indian cress, an American climbing annual with pungent fruits and showy orange flowers.

Natal (na-tăl'), a state in the Union of South Africa, on the southeast coast, bounded by the Cape Province on the S. W. and the Transvaal and Orange on the N. W. and with a seaboard of 180 miles on the Indian Ocean. Its area is 34,600 square miles. The only spot where sheltered anchorage can be obtained is at Port Natal, a fine circular bay near the center of the coast. (See *Durban*.) The surface is finely diversified, rising by successive terraces from the shore towards the lofty mountains on its western frontiers. The chief summits are Champagne Castle, 10,357 feet; Mont aux Sources, about 10,000 feet; and Giant's Castle, 9657. The mineral productions are principally coal, ironstone, limestone and marble. Gold has also been found in various localities. The colony is well watered, but none of its rivers are navigable. The climate on the whole is extremely salubrious, and by no means trying to European constitutions. There are large forests on the western and northern frontiers. The soil is generally rich and strong. On the higher forest and table land cattle thrive well; and in the interior wheat, barley, oats, maize, beans and vegetables of almost every de-

scription have been largely and successfully grown. In many parts the vine and fruit trees thrive, and in the coast region generally cotton, tobacco, indigo, sugar-cane and coffee grow well. Tea planting has been recently introduced. The chief exports are coal, gold, wool, sugar, hides and bark. In the less-frequented parts of the interior elephants and lions are still occasionally seen; the leopard is not uncommon, and hyenas, tiger-cats, antelopes, jackals, ant-bears and porcupines are numerous. The hippopotamus has still his haunts in several of the rivers, and there are numbers of small crocodiles. The birds comprise the vulture, several varieties of eagle, the secretary-bird, wild turkey, etc.—Natal was discovered on Christmas Day, 1497, by Vasco da Gama, a Portuguese, and named by him 'Terra Natalis.' The first settlers were the Dutch Boers, who left Cape Colony in 1836, and in 1839 removed to Port Natal and proclaimed themselves an independent republic. The establishment of a hostile settlement at the only port between Algoa and Delagoa Bays was incompatible with British interests, and in 1845 Natal, after a formidable resistance by the Boers, was proclaimed a British possession. In 1856 it was separated from Cape Colony and made a separate colony. Natal was invaded by the Boers

NATATORES.
A. Head of Grey Lag Goose.
B. Foot of Domestic Goose.

in 1881 and again in 1899. Capital, Pietermaritsburg. Pop. estimated at 1,206,886, of whom four-fifths are natives.

Natatores (nā-ta-tōr'ēz), the order of swimming birds characterized by a boat-shaped body, usually by a long neck, short legs placed behind the center of gravity so as to act as paddles, toes webbed or united by a membrane to a greater or less extent, close oily plumage to protect them from sudden reductions of temperature from the water, in which they mostly live and obtain their food. The young are able to swim and procure food for themselves the moment they are liberated from the shell. The Natatores include the ducks, geese, swans, flamingoes, the penguins, auks, divers, grebes, gulls, pelicans, cormorants, gannets, frigate-birds, darters, and others.

Natchez (nach'ez), a city of Mississippi, capital of Adams Co., on the Mississippi River, 279 miles above New Orleans. It is built on a bluff 150 feet above the water, and on the narrow strip of land between the foot of the hill and the river. Natchez is a great cotton mart, and has an increasing trade. Its industries embrace cotton and oil mills, cotton presses and gins, brick and ice factories, etc. Pop. 11,791.

Natchez, a tribe of Indians formerly residing in the west of the present State of Mississippi, near the Mississippi River. Encroached upon and badly treated by the French who had settled that region, they rose in 1729 and killed all the Frenchmen within their territory. As a result they were attacked and nearly all destroyed, the few who survived being taken and sold as slaves. The Natchez differed from all the other Indians of this country in their political organization, which was that of an aristocracy and class of nobility. Their ruler, known as the Sun, and supposed to be descended from the solar deity, had absolute power of life and death over his subjects. They had temples in high elevations and an intricate system of religion and organization, surpassing that of any other tribe north of Mexico

Natica (nat'i-ka), a genus of gasteropodous molluscs, type of the family Naticidæ.

Natick (nā'tik), a town of Middlesex Co., 17 miles w. s. w. of Boston. It has extensive boot and shoe manufactures, also baseballs, woodenware, clothing, etc. Pop. 9866.

Nation (nā'shun; Latin, *natio*, from *natus*, born), either a people inhabiting a certain extent of territory and united by common political institutions, or an aggregation of persons of the same ethnological family and speaking the same or a cognate language. In some universities, as in those of Glasgow and Aberdeen, for instance, the students are divided into 'nations' to distinguish those from different districts or

countries. This custom originated in the University of Paris antecedent to the institution of faculties.

National Airs (nash'un-al), any class of airs peculiarly identified with the music of some particular people, and especially a tune which by national selection or consent is adapted to words which represent or reflect a sentiment, taste, or habit of a nation, and which is usually sung or played on certain public occasions. Examples are: *The Star Spangled Banner*, in the United States; *God Save the King*, in Britain, and the *Marseillaise*, in France.

National Assembly, the legislative body formed in France in 1789, developed from the States General. It was the legislature that inaugurated the French Revolution.

National Bank. See *Bank*.

National Cemeteries. In the second year of the Civil war (1862) the President of the United States was authorized by Congress to purchase national cemetery grounds for soldiers who had died in the defense of the nation. There are 83 of these cemeteries, containing the bodies of 330,700 men—soldiers and sailors. Each grave is marked by a stone tablet. Liberal appropriations are made by Congress from year to year for the proper maintenance of the cemeteries.

National Debt, the sum which is owing by a government to individuals who have advanced money to the government for public purposes, either in the anticipation of the produce of particular branches of the revenue, or on credit of the general power which the government possesses of levying the sums necessary to pay interest for the money borrowed or to repay the principal. Of national debts that of France is the highest, reaching the enormous total of over $6,000,000,000, Russia, with about $4,500,000,000, and Great Britain, with $3,400,000,000, come next. These sums were largely increased by the war of 1914–16.

National Educational Association, formerly National Teachers' Association (founded 1857), a nation-wide organization of teachers in the United States, holding annual conventions. The association has done much to unify the work of educational institutions throughout the country.

National Forest Reserves. Within the decade following 1900 remarkable progress was made by the United States government in setting aside the forest-clad portions of the public lands for the benefit of the people as a whole, definitely withdrawing them from individual occupation. Of the estimated 600,000,000 acres of forest within the country about one-third, or 190,608,243 acres, had thus been set aside by the beginning of 1912. This included 163,777,218 acres within the States, 26,761,620 acres in Alaska, and 65,950 acres in Porto Rico. The idea of conservation has been rigidly applied to this vast forest area, a large number of forest wardens being employed and careful supervision exercised to prevent fires or any wasteful usage. Yet the national forests are put to service. Thus, their forage crop supports cattle, horses, sheep and goats worth $30,000,000, annually. The annual timber crop which they are capable of producing is estimated as worth, on the stump, $10,000,000 more.

National Guard, in the United States, the organized militia of the several states. In 1917, when conscription was enforced in order to provide troops for service in Europe during the great war, the National Guard was disbanded, the personnel having been drafted into the new army of the United States. In France the National Guard was a home-defense organization; it was dissolved after the suppression of the communal revolt in Paris (1871).

Nationalists, the term applied to the Irish political party whose program includes the more or less complete separation of Ireland from Great Britain. See *Home Rule*.

National Institute of Arts and Letters was established in 1898. Qualification for membership, which is limited to 250, is 'notable achievement in art, music or literature.' From this body was organized in 1904 the American Academy of Arts and Letters (membership 50), whose object is 'to represent and further the interests of the fine arts and literature.'

National Insurance. See *Compulsory Insurance*.

National Parks, the public lands of the United States, which, because of their remarkable natural features have been reserved from settlement and set aside for the enjoyment of the general community. The greatest in extent of these is the Yellowstone National Park, in the States of Wyoming and Montana. It embraces about 3348 square miles. A second is the Yosemite Na-

tional Park, in California, of about 1512 sq. miles, remarkable for grandeur and beauty. Sequoia Park, in Tulare Co., and General Grant Park, in Mariposa Co., California, contain the finest specimens of the famous 'big trees' of that State. The Casa Grande Ruin, near Florence, Arizona, is one of the most noteworthy relics of the prehistoric dwellers of the Southwestern United States. Another park takes in the territory of the petrified trees of Arizona, a remarkable example of organic transformation. In addition may be named the Mt. Ranier National Park in Washington, the Crater Lake National Park in Oregon, the Glacier National Park in Montana, and the Rocky Mountain National Park. Canada has the attractive Banff National Park. The United States government has also reserved certain localities on account of their historic interest, including the Gettysburg, Chickamauga, and some other battlefields. See *Yosemite* and *Yellowstone*.

Natron (nā'trun; Na_2CO_3 10 H_2O), native carbonate of soda or mineral alkali, found in the ashes of several marine plants, in lakes in Egypt, and in some mineral springs.

Natron Lakes, several lakes or pools rich in natron in the vicinity of Zakook, a village about 60 miles W. N. W. of Cairo.

Natterjack (nat'er-jak), NATTERJACK TOAD, the *Bufo calamita*, a species of toad found in various parts of Western Europe, in certain parts of Asia (including Tibet), and not uncommon in England. The general color is lightish-brown, spotted with patches of a darker hue. A line or streak of yellowish tint passes down the middle line of the back. It does not leap or crawl like the common toad, but rather runs, whence it has the name of walking or running toad. It has a deep and hollow voice, audible at a great distance. It is often found in dry situations.

Nattor (nat-tōr'), a town of India, in Bengal, on the Nadar River, an offshoot of the Ganges. Pop. about 10,000.

Natural Bridge (nat'ū-ral) in Rockbridge Co., Virginia, spans a deep chasm, through which a small stream flows, and is formed by an immense limestone stratum fashioned into an arch 215 feet high, length 93 feet, width 80 feet.

Natural Gas, a gas found issuing naturally from crevices in the earth's surface in various localities. It burns like ordinary coal gas, and consists of a mixture of various hydro-carbons, the chief ingredient being marsh-gas (fire-damp). Large deposits have been found in the United States, which are used both for lighting and as fuel. The supply is obtained chiefly from Pennsylvania, West Virginia, Ohio, Kansas, Oklahoma, Texas, Louisiana, California.

Natural History, in its earlier sense, that department of knowledge which comprehends all the concrete sciences, but in more recent times restricted to the science of living things.

Naturalism (nat'yū-ral-izm), a term which in the history of philosophy has been used with a variety of meanings. In general it refers to that which is in accordance with nature. In literature the term refers specifically to the principles and methods of the ultra-realistic school.

Naturalization (nat-ū-ral-i-zā'-shun). The laws of the United States provide that to become naturalized an alien must declare on oath before a circuit or district court, or a district or supreme court, or a court of record of any of the States having a seal and a clerk, two years at least prior to his admission, that it is his *bona fide* intention to become a citizen of the United States, and to renounce forever all allegiance and fidelity to any foreign prince, state or sovereignty of which the alien may be at the time a citizen or subject. His full admission to citizenship cannot take effect until he has resided in this country for the continued time of five years preceding his admission, and one year, at least, in the State or Territory in which he makes application. See *Alien*.

Natural Philosophy, originally the study of nature in general; but now commonly restricted to the various sciences classed under *Physics*.

Natural Resources, CONSERVATION OF, a system of protecting and preserving the forests, mines, fisheries, waters and other natural resources of the United States, decided upon by a convention of State governors, held in Washington, D. C., in 1908. These forests were being rapidly depleted by wasteful usage, and a Conservation League was formed to adopt suitable measures for their future preservation.

Natural Selection, a phrase frequently employed in connection with Darwin's theory of the origin of species, to indicate the process in nature by which plants and animals best fitted for the conditions in which they are placed survive, propagate, and spread, while the less fitted die out

and disappear; this process being combined with the preservation by their descendants of useful variations arising in animals or plants. Mr. Darwin's theory takes origin from the fact that all species *vary* to a greater or less extent.

Natural Theology, is that department of ethics which deals with those propositions relating to the existence and attributes of God and the duty of man which can be demonstrated by human reason, independent of written revelation.

Nature Printing, is the art of giving an exact reproduction of natural objects by printing from impressions of the objects themselves formed by pressure on metallic plates. The only objects to which the art can be applied with success are those with tolerably flat surfaces, such as dried and pressed plants, especially ferns and seaweeds, embroidery and lace, the grain of wood, etc.

PEARLY NAUTILUS. (*Nautilus pompilius.*)
a, Mantle. *b*, Its dorsal fold. *c*, Hood. *o*, Eye. *t*, Tentacles. *f*, Funnel.

Naugatuck (na'ga-tuk), a borough of New Haven county, Connecticut, on a river of same name, 27 miles N. by E. from Bridgeport by Naugatuck Railroad. It has large rubber works and manufactures of underwear, machinery, brass, iron, paper boxes, buttons, cutlery, etc. Pop. 12,722.

Naukratis (na'kri-tis), an ancient Greek city in Egypt, which stood on a navigable canal in the western part of the Delta near the Canopic branch of the Nile. It existed as early as the beginning of the seventh century B.C., and had been a place of great splendor. Recent excavations on the site of the city have been productive of highly valuable results.

Naumachia (na'mā'ki-a; from the Greek *naus*, a ship, and *mache*, a fight), among the Romans a public spectacle representing a mock sea-fight. The same term also signified the edifices in which these combats took place.

Naumburg (noum'burh), a town of Prussian Saxony, 18 miles S. S. W. of Merseburg, in the valley of the Saale. One of the principal buildings is the cathedral, partly Gothic and partly Romanesque, completed in 1249. The manufactures consist of combs, playing cards, leather, hosiery, etc. Pop. (1910) 26,462.

Naupactus. See *Lepanto.*

Nauplia. See *Napoli di Romania.*

Nauplius (na'pli-us), a term applied to the earliest stage in the development of the lower Crustacea. The naupliiform larva has an ovate unsegmented body, a median eye, and three pairs of limbs. This form is regarded as the primitive form of all crustaceans.

Nausea (na'sha), the sensation of sickness, or inclination to vomit, similar to that produced by the motion of a ship at sea. Though the feeling is referred to the stomach, it frequently originates in disorder of other and remote parts of the body, such as the brain, kidneys, womb, etc.

Nautical Almanac. See *Almanac, Nautical.*

Nautilus (na'ti-lus), a genus of cephalopods with polythalamous or many-chambered shells. The shell of the pearly nautilus (*N. pompilius*) is a spiral with smooth sides. The turns or whorls are contiguous, the outer whorl covering the inner. The chambers of the shell are separated by transverse septa, and one after the other have been the residence of the animal, being successively abandoned as it has grown. The animal thus always resides in the cavity of its outermost or external chamber. A siphuncle connects the body with the air-chambers, passing through each transverse septum till it terminates in the smallest chamber at the inner extremity of the shell. These internal chambers contain only air. By means of

Nautilus shown in section.

the siphuncle the animal is enabled to sink or swim at will. The nautilus is an inhabitant of the tropical seas. Only three or four existing species are known, though the fossil species exceed a hundred. The name is often loosely applied to the shells of different genera of mollusca. The animal, which has been poetically said to sail in its shell upon the surface of the water, is the paper-nautilus or argonaut. The shell in question, somewhat resembling a sail, is its egg case. See *Argonaut*.

Nauvoo (nȧ-vō'), a city of Hancock county, Illinois, founded in 1840 by the Mormons, and afterwards occupied for a time by a company of French socialists. The culture of grapes is the chief industry. Nauvoo is the seat of St. Mary's Academy and Spaulding Institute. Pop. 1020.

Navajo Indians (nȧ'vä-hō), a tribe of southwestern American Indians of formerly roving and warlike habits, many of whom are now engaged in civilized pursuits. They occupy a reservation in the N. W. of New Mexico and the N. E. of Arizona.

Naval Academy, UNITED STATES, the school at which are educated the executive officers of the navy. It was founded in 1845 at Annapolis, the capital of Maryland, where the Severn River enters the Chesapeake Bay. The first course was for five years, but this was changed to seven years, three of them at sea, in 1849. Early in the Civil War the Naval School was moved north to Newport, Rhode Island, but returned to Annapolis in 1865. Admiral David D. Porter, one of the naval heroes of the war, became its superintendent, and under his excellent rule began the modern Naval Academy.

Since 1912 the students have a four-years' course, during which they are styled midshipmen, and on graduation are commissioned as ensigns. The pay of a midshipman is $600 a year, commencing at the date of his admission to the academy. The course includes mechanical drawing, engineering, algebra, geometry, trigonometry, English, French, Spanish, hygiene, seamanship, boats, steam tactics, signals, gun construction, navigation, ballistics, compass correction, international law, fencing, dancing, swimming, etc. Three midshipmen are allowed for each Senator, Representative and Delegate in Congress, two for the District of Columbia, one for Porto Rico, and fifteen appointed each year from the United States at large. The law authorizes the appointment of one hundred enlisted men each year, to be selected as a result of a competitive examination of enlisted men of the Navy and Marine Corps, who have been in the service at least one year, and who are under twenty years of age by August 15 of the year it is desired to enter. All candidates are required to be citizens of the United States and must at the time of their examination for admission be between the ages of sixteen and twenty years; they must be unmarried and any midshipman who shall marry before his final graduation shall be dismissed from the service.

Among the famous buildings on the campus are Bancroft Hall, the Physics and Chemistry Building, the Steam Engineering Building and the Memorial Chapel, under which lies the body of John Paul Jones, brought back from an obscure grave in France through the efforts of General Horace Porter, by a squadron of American men-of-war in 1906. There are such trophies as captured cannon, and the bronze bell brought back from Japan by Commodore Perry. In the Academy Building is Tecumseh, the figurehead of the old frigate *Delaware*.

Naval Advisory Board, a voluntary organization of civilian inventors and engineers constituted by Secretary of the Navy Daniels during the European war 'in order to utilize to the best advantage of our navy a mobilization of the talent and genius of America.' The Board as first established consisted of Thomas A. Edison, chairman, and 22 other members, and met for the first time October 6, 1915.

Naval College of Canada, a school for training naval cadets at Halifax, N. S. Each year a certain number of cadets who have completed their course in the college are entered in the Royal Navy as cadets of the same standing as graduates of the Dartmouth Naval College. Students are not required to adopt a naval career.

Naval Hospitals. See *Hospital*.

Naval Militia, UNITED STATES, an organization supplemental to the naval reserve, with divisions in California, Connecticut, District of Columbia, Florida, Hawaii, Illinois, Indiana, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Washington, Wisconsin. Men enlisted in the Naval Militia receive 25 per cent of the base pay of similar active ratings as retainer fee if they attend all prescribed drills, or a proportionate amount if not attending all drills. In order to receive this retainer fee they must enroll in the Volunteer Naval Reserve. Annual retainer fees for lieutenants and above, $500; for junior

grade lieutenants, $240; for ensigns, $200; and for warrant officers, $120. In case of emergency the President may enroll any or all of the Naval Militia into the National Naval Volunteers, who may be drafted into the regular naval service and be subject to the laws. The term of enlistment is three years. In July, 1915, the Naval Militia had a strength of 8311.

Naval Reserve, a body of men organized to supplement the regular naval forces in time of war. In the United States six classes of reserves have been established: (1) *Fleet Naval Reserve*, composed entirely of ex-service officers and men; (2) *Naval Reserve*, composed of ex-merchant marine officers and men; (3) *Naval Auxiliary Reserve*, composed of officers and men serving on board vessels of the United States merchant marine listed by the Navy Department as desirable auxiliaries and to be taken over as such in time of war, personnel to remain on vessels on which serving when called into active service; (4) *Naval Coast Defense Reserve*, composed of owners and operators of yachts and power boats suitable for naval purposes in defense of the coast; (5) *Volunteer Naval Reserve*, composed of those eligible to serve in any of the foregoing classes, but who obligate themselves to do so without remuneration in time of peace; (6) *Naval Reserve Flying Corps*, composed of those transferred from the Naval Flying Corps. In 1917 Secretary Daniels announced that the naval reserve amounted to 54,000 men and officers, 16,500 men and 856 officers being of the Naval Volunteers.

The British Naval Reserve consists of five classes: (1) Royal Fleet Reserve; (2) Royal Naval Volunteer Reserve, consisting of officers and men in the merchant service but trained in the navy; (3) Pensioners, long-service men; (4) Royal Naval Reserve; (5) Coast Guard. In 1914, at the beginning of the European war, there were about 67,000 men and officers in the naval reserve of Britain.

The German Naval Reserve, like the French, Italian and Austrian, is composed of the conscripted men from the seafaring population. In the German reserve in August, 1914, there were about 90,000 men; the French reserve, 60,000; Italy, 30,000, and Austria, 15,000.

Naval Reserve, Junior, UNITED STATES, an organization for the training of American boys for the United States navy and merchant marine. Boys of from ten to fourteen are admitted to the preparatory camps; the ages for membership in the Junior Naval Reserve are 14 to 18. The first waterside camp school was opened in the spring of 1916 on the Thames River, near London, Conn., and is known as Camp Dewey. Other training camps are located at Corpus Christi, Texas (Camp Paul Jones), and at West Palm Beach, Florida (Camp Josephus Daniels).

Naval Stores, the term applied to such materials as resin, tar, pitch and turpentine, derived from the pine tree and used in ship construction. A prolific source of these has been the pine forests of the Southern Atlantic States, successively North and South Carolina, Georgia, and at present Florida.

Naval War College, located at Newport, R. I., was established in 1881. Its principal function is to educate officers in the art of war and to prepare plans of operations in conjunction with the General Board, the Office of Naval Intelligence, and the Chief of Operations. It is presided over by a naval officer.

Navarre (nȧ-vär'; Spanish, *Navarra*), a former kingdom, now a province of Spain, between Aragon, Old Castile, and Biscay; area, 4045 square miles; pop. 307,669. Its northern boundary is very mountainous, being composed of the western slopes of the Pyrenees, which, by their numerous streams, supply the Ebro and Ridassoa, its principal rivers. Extensive forests clothe the mountain slopes, but the lowlands produce wheat, maize, wines, oil, flax, hemp, and all sorts of leguminous plants, as well as abundant pastures for cattle of every description. Iron, copper, lead, etc., are among the minerals. The capital is Pamplona. The ancient Kingdom of Navarre comprised both the modern Spanish province, sometimes called Upper Navarre, and also French or Lower Navarre, separated from the former by the Pyrenees, and now comprised in the departments of Basses Pyrénées and Landes. Ferdinand the Catholic annexed Upper Navarre to Castile in 1512, while the north portion ultimately passed, with Henry IV, to the crown of France.

Nave (nāv), in Gothic architecture, that part of a church extending from the western entrance to the transept, or to the choir and chancel, according to the nature and extent of the edifice.

Navel (nā'vl), or UMBILI'CUS, the aperture or passage in the abdomen which in the adult is normally closed, but in the fœtus or embryo gives passage to the umbilical vessels, by means of which the fœtus communicates with the parent through the placenta. The cicatrization or healing of the navel produces the contracted and depressed appearance

so familiar in the external aspect of the structure.

Navigation (nav-i-gā'shun), the science or art of conducting ships or vessels from one place to another. The management of the sails, rudder, etc., or the working of the ship generally, though essential to the practice of navigation, belongs rather to seamanship, navigation being more especially the art of directing and measuring the course of ships, the method of determining their position, etc., by the laws of geometry, or by astronomical principles and observations. In order to the accomplishment of this the ship must be provided with accurate charts of seas, plans of ports and harbors, etc., compasses, chronometer, sextant, log and log-line, various mathematical instruments, leads and lead-lines, log-book, etc. It is by the compass that the direction in which the ship sails, or should sail, is determined. Though it points in a northerly direction, it does not generally point to the true north, but has a certain variation which must be taken into account. The rate of speed at which a vessel is sailing is found by means of the log, which is heaved usually at the end of every hour. By noting the rate of sailing, the direction of the course, and the time occupied, the ship's position may be estimated, allowance being made for deviation caused by currents, and by the wind driving the vessel to leeward. The position thus determined is said to be found by dead-reckoning. It is not safe to trust to dead-reckoning for any length of time, and a more accurate method of finding the vessel's position at any time is required. This consists in taking observations of the heavenly bodies with the sextant, and these being compared with data given in the Nautical Almanac, while correct Greenwich time is given by the chronometer, the latitude and longitude, or true position, is easily found. In navigating a ship a certain knowledge of trigonometry is required, but the operations can be much shortened by tables and instruments. In directing a ship's course, and applying it on a chart, several methods of what are called *sailings* are employed, as plane sailing (the earth being regarded as having a plane surface), Mercator's sailing, great circle sailing (sailing on a great circle of the sphere), etc.

Navigation, LAWS REGARDING. After the establishment of the independence of the United States it was natural that a spirit of retaliation should prevail in the framing of the navigation laws. Laws passed in 1790 and 1792 discriminated to such an extent in favor of American shipping as to give a monopoly of the foreign carrying trade. In 1815 a treaty was negotiated between the United States and Great Britain by which the ships of the two countries were placed reciprocally upon the same footing in the ports of the United States and Great Britain. The shipping act of 1884 placed the sailing fleet of the United States on an equality with the vessels of other flags as regards the expenses of navigation. Consular fees are abolished, and consuls are paid by the government. The further payment of advance wages to seamen was prohibited. The 'limited liability act' provides that the individual liability of a ship owner, for the ship's debts, except for wages due to persons employed by the owners, shall be limited to the proportion of his interest.

Navy (nā'vi), a collective term for all the ships, or all of a certain class belonging to a country. Thus we may speak of the mercantile navy of a country; but the term by itself means the whole of the ships of war belonging to a nation; or the whole naval establishment of any country, including ships, officers, men, stores, etc. The organization of a national naval force in England is assigned to Alfred the Great; but it was not till the time of Henry VIII that a regular shape was given to the Royal Navy as a standing force. In his reign an admiralty office was established and public dockyards opened at Woolwich, Deptford and Portsmouth. In the reign of Elizabeth the naval power of England was increased by charters and money grants given to merchant adventurers, trading companies and privateers. Classing ships by rates or ranks based on their relative fighting power appears to have become well established during the Commonwealth, when the navy attained great importance; and a similar classification prevailed up to the middle of the present century. When George I came to the throne the navy consisted of 178 ships, ranging from about 374 tons burden to one of 1869 tons, carrying 100 guns. Two leading qualities now stood forth as the most important object to be attained in the construction and equipment of vessels for war—strength of offensive armament, and speed and facility of manœuvring. These qualities gained in relative importance at the expense of a previously preponderating element of equipment, namely, the number of fighting men available for assault at close quarters. Two classes of vessels, according to the preponderance of one or other of these qualities, thus came to constitute at this time the chief strength of fleets. The ship of the line, or first class war vessel, carried the

strength of offensive equipment to the utmost limit practicable without sacrificing sea-going qualities. The frigate, excelled in strength only by a line-of-battle ship, was built and rigged with every artistic appliance to secure speed. The great point in a first-class vessel was the weight of broadside, and a hundred or more guns on three decks were commonly carried. In a pitched battle it was the line-of-battle ships that bore the brunt of the fight and decided the day. The frigates scoured the seas on special missions, escaped from the enemy's line-of-battle ships by speed, destroyed his privateers, and protected the commerce of their own country. During all the great European wars these were the leading types of vessels employed. In the early part of the nineteenth century Britain had usually over 100 ships of the line and about 150 frigates in commission, besides an equal number of sloops and other vessels, measuring 800,000 to 900,000 tons in all. Between 1814 and 1859 steam was gradually substituted for sailing vessels in the navy; and in the latter year the French *Gloire*, historical as the first sea-going ironclad, was launched. (See *Iron and Steel-clad Vessels.*) Recently the rate of increase in both Germany and France has surpassed that of the United States, so that in 1915 Germany held second place and France was carrying out plans that would give her third. The programme of Germany, as laid down by an act of 1912 (to be completed in 1923) provided for 41 first-class battleships, 12 battle cruisers and 30 smaller cruisers for the fleet; 8 large cruisers and 10 small ones for foreign service. In 1895 Japan began building battleships of the first class, and in the war with Russia the Japanese navy did valiant work. Since that time it has been building fast enough to hold fifth place among the nations. Russia in this war received a blow from which it could not easily recover, though in 1915 it still held sixth place on the list, Italy making a close seventh in number of ships and men, and probably surpassing Russia in efficiency. Austria ranked next to Italy. Great Britain has long held the supremacy, being strong not only in numbers and type of ships, but in efficiency and personnel. Canada and Australia organized colonial navies and the Australian navy did valiant service in Eastern waters during the European war. The navy of France, owing to frequent changes of government and policy has never been strong, and much money has been wasted in building inefficient vessels; but in 1912 an extensive programme was authorized, providing for 28 first-class battleships of the most powerful type to be completed in 1920. Italy demonstrated in the Turko-Italian war the tremendous advantage of sea power and the efficiency of her own fleet. The navy of Greece was reorganized along British lines, and at the outbreak of the European war in 1914 was being rapidly increased. Turkey was also engaged in building up a navy. The navies of the other European nations are not important, though Spain has reorganized her naval service along more ambitious lines, and the navies of Holland, Denmark, Norway and Sweden are efficient. The navies of South American countries, with the exception of Brazil, Argentine and Chile, are not important.

Navy, DEPARTMENT OF THE, one of the executive departments of the Government of the United States, created by Act of Congress April 30, 1798, the control of naval affairs having previously been one of the duties of the Department of War. The chief official of the department is a Secretary of the Navy, appointed by the President with the advice and consent of the Senate, and forming a member of the President's cabinet. The President being, by direction of the Constitution, commander-in-chief of the Army and Navy, the Secretaries of both these departments are in general matters subject to his direction. But there are a number of specific duties imposed upon the Secretary by law concerning which he is not under the direction of the President. Thus, in common with the heads of the various government departments, it is his duty to make an annual report to the President of the operations of his department. The Assistant Secretary, also appointed by the President, performs his duties when from any cause he is absent or unable to act, and since 1880 there has been a Judge Advocate General of the navy who is in charge of courts of inquiry, courts martial, or any other legal proceedings which may arise. On July 5, 1862, eight bureaus were established in the Navy Department, each with a chief official appointed by the President from among the officers of the navy. These bureaus are those of Yards and Docks, Equipment, Navigation, Ordnance, Construction and Repair, Steam Engineering, Medicine and Surgery, and Supplies and Accounts. The European war added vastly to the activities of the department, large numbers of vessels being built for warlike, transportation, and other duties and various large shipbuilding plants being added to the naval equipment.

Navy of the United States. The Navy came legally into existence on December

22, 1775, by act of the Continental Congress then in session. Thirteen ships, representing the thirteen colonies, were ordered to be built, the largest of them to carry 32 guns. For immediate use a number of smaller vessels were purchased, two of them ships, renamed the *Albert* and the *Columbus*. Esek Hopkins, brother of the Governor of Rhode Island, was put in command of this modest squadron, while Lieutenant Paul Jones had the honor of raising to the masthead of the *Albert* the banner of the colonial union, a flag of thirteen stripes alternately red and white, with the British Union Jack on the field. The "red, white and blue" United States standard had not yet come into existence. Of those who took part in that ceremony Paul Jones alone won a distinguished place in history as the hero of the world-famed fight between the *Bonhomme Richard* and the *Serapis*. The other vessels, with a large number of privateers, were chiefly engaged in making prizes of British merchantmen.

U. S. Frigate "Constitution"

A new movement in this direction was made on June 6, 1794, when the present United States Navy was organized, Captain John Barry being appointed its first commodore. Four years later the Navy Department of the American Government began its career. The principal ships in the navy as then formed were the frigates

Constitution, *Constellation* and *United States*. By the end of 1799 there were 5 frigates and 23 ships of war in commission. These were needed, for a naval war had begun with revolutionary France, whose cruisers were seizing American merchantmen without regard to the character of their cargoes, if bound to ports hostile to France. These piratical operations ceased when the *Constellation*, Captain Truxton, had handled a few of the French cruisers severely, and the same was the case at a later date with the corsairs of Algiers and Tripoli, which had sought to put American commerce under tribute. Great Britain followed in the same direction during the Napoleonic wars, stopping American vessels on the high seas and taking sailors from them to serve in its ships, on the plea that these were British subjects. This in the end led to war between the two countries, a contest in which the American navy did admirable work, capturing or sinking numbers of the best British frigates while the American armies usually found themselves overmatched.

Between this period and that of the Civil war in the United States, the war vessels of this and other countries were steadily growing larger and more powerful and the number and caliber of their guns increasing, while steam power had taken the place of wind and sails as means of propulsion. And while the war in question was for the most part fought on land, the navy was by no means idle, alike in the work of blockade and that of attack on the ports of the Confederate States by war vessels of the North. The powers of offense had grown so great that increased means of defense became more and more urgent. Wooden walls could no longer be trusted as ramparts of defense, and the need of putting something more resistant than wood in the way of the piercing ball and the exploding shell became evident. The first ironclad was not of American origin. One was built in France in 1859, and another, the *Warrior*, was launched in England in January, 1861, the latter covered above the water line with 4½-inch iron plates. When this new conception in naval architecture crossed the ocean it was first tried out in the South, a Mississippi tugboat being cut down nearly to the water's edge and covered with a rounded roof, which was plated with 1½-inch bars of iron. It came out October 31, 1861, but did no more harm than to cause a spasm of fright and a hasty flight in the vessels guarding the channel.

Such were the initial steps in the production of armored warships. Work of the same kind was quickly under way in the North, alike by the Unionists and the Confederates. The latter had raised a ship sunk at the Norfolk Navy Yard, covered it with a sloping roof of heavy timbers, placed over this iron plates 4 inches thick, and armed it with a battery of 9-inch and 7-inch guns. This formidable floating fort—for that period—was sent out in March, 1862, to deal with a squadron of old type wooden war vessels in Hampton Roads. Fortunately for the Union government, it was prepared to meet the *Merrimac*, as thus reconstructed. A new type of iron-clad vessel, the invention of John Ericsson, was at this time on its way south. The *Monitor*, as this was called, was a low-lying craft, its armored sides rising little more than a foot above the water level. Above this was a revolving circular turret, 20 feet in diameter and 9 feet high, covered with 8-inch iron plate, and carrying two 11-inch smooth-bore guns, firing solid shot of about 180 pounds weight. Such were the two strangely appearing ships that were to fight the first battle of ironclads in the world's naval history. What followed is familiar to American readers. The *Merrimac* made havoc among the wooden ships and fear was entertained that it would ascend the Potomac and bombard Washington. But it was checked in its career by the *Monitor* and forced to return to its base. Such was the brief but effective hostile career of these primitive iron monsters of the wave. The *Merrimac* never came out again. The *Monitor* was later sunk in the open sea. But they had demonstrated one important fact: the day of the wooden warship, which had ruled the waves for thousands of years was at an end. Iron and steel ships were to take its place, and all haste was made to plate with iron the craft of the Mississippi and its affluents and fit them for the work of running the gauntlet of the Confederate river ports.

This must suffice to tell the story of naval progress in the United States during the Civil war. The types of vessels that fought the first battle of ironclads were not successful. Nothing like the *Merrimac* reappeared. New *Monitors* were built, and some still exist, but they have been superseded by vessels of the older type, though retaining the one useful element of the *Monitor* class—the revolving turret, with its heavy guns. After the war in question the United States for years paid little attention to naval construction, but all the nations of the earth had been taught a lesson by the Hampton Roads battle and steel-clad ships, of steadily increasing size and weight of

gun-fire, took the place of the older wooden warship.

It was not until the period approaching the Spanish war that the United States Government awoke fully to the need of keeping step with the other nations, especially with Great Britain and Germany, in its naval progress. That war taught no new lessons, other than the fact that, as matters stood, the United States needed what was practically a double navy, one for the Atlantic and a second for the Pacific. It was an object lesson in the necessity of closer connection between these two oceans, one which has since been realised in the construction of the Panama Canal. Navy yards have since been opened at various parts of the coast-line until ten of these were in existence by the end of 1917. The organization of the navy changed from time to time in personnel and establishment; battleships, cruisers, torpedo boats, destroyers, and submarines (the latter an American invention) were produced, all steel-clad, and the battleships and cruisers rapidly growing in size and weight of armament, and the Delaware River at Philadelphia and in its vicinity became one of the greatest ship-building localities on the earth. While the navy of Great Britain remained much in advance of any of its competitors, those of the United States and Germany closely approached each other in strength and importance. As for the famous British dreadnought of 1906 (17,000 tons), this has been so greatly surpassed that ships of almost double this tonnage are now afloat, while the 12-inch gun of the recent past has now grown into guns of 16-inch caliber, with a corresponding increase in weight of missiles. The number of armed turrets is usually four.

U. S. Battleship "Louisiana"

The tonnage of the United States Navy up to the end of 1916, as compared with those of Great Britain and Germany of July 1, 1914, was as follows: United States, 1,097,502; Great Britain, 2,713,756; Germany, 1,304,640 tons. Of these Great Britain had 36 of and above the dreadnought type; Germany, 20; United States, 17. Of the battleships under construction by virtue of the Act of August 29, 1916, the *Colorado*, *Maryland*, *Washington* and *West Virginia*, carry as their heavy batteries eight 16-inch guns, and are able to throw a weight of metal no-

where surpassed, while also equipped for superior resistance and speed. Battle ships and battle-cruisers laid down subsequent to 1917 are all fitted to carry 16-inch guns, while their displacement is now in excess of 32,000 tons. A naval bill approved in March, 1917, adds materially to the naval establishment of the United States, which has now a navy afloat or building fairly equal to that of any other power except Great Britain, its close ally.

The United States Marine Corps is a branch of the military service which is under the direction of the Secretary of the Navy; its authorised strength was increased in 1917 from 17,500 to 30,000. This force is used to garrison navy yards, naval stations, the Naval Academy, naval hospitals, magazines and prisons and furnishes detachments to vessels of the navy. It also garrisons certain of the United States legations and serves to protect the interests of America abroad. The corps has been called upon frequently to suppress disorder in Latin-America and a large detachment was among the first of the American forces to arrive in France.

Navy Yards. See *Dockyards.*

Naxos (nāks'os), or NAXIA, an island of the Grecian Archipelago, the largest of the Cyclades, length 18 miles; breadth, 12 miles; area, 170 square miles. It is hilly, but extremely productive. Pop. (1907) 25,185.

Nazareth (naz'ȧ-reth), a small town in Palestine, 65 miles north of Jerusalem, is celebrated as the residence of Jesus during his youth. It is surrounded on all sides by hills. The houses, which are of stone, are well built, with flat roofs. The principal edifices are the conventual buildings of the Franciscan monks, which include the Latin Church of the Annunciation. Pop. about 11,000.

Nazarites (naz'ȧr-Itz), or NAZIRITES, among the ancient Jews, persons who devoted themselves to the peculiar service of Jehovah for a certain time or for life. The law of the Nazarites (from the Hebrew *nazar*, to separate) is contained in Numbers vi, 1-21.

Neagh, LOUGH (loh nā or nā'ȧh), a lake of Ireland, the largest in the British Isles, being 19 miles long by 12 miles broad, and covering an area of 153 square miles. It washes the counties of Antrim, Armagh, Tyrone and Londonderry. Its waters are well known for their petrifying properties.

Neal (nēl), DANIEL, an English dissenting clergyman, born in 1678; died in 1743; long pastor of a church in London. He wrote a *History of New England* and other works, but is best known by his *History of the Puritans* (1732-38).

Neale (nēl), JOHN MASON, clergyman of the English Church, born in 1818; died in 1866. He belonged to the High Church party, and was a voluminous writer, among his works being *History of the Holy Eastern Church; Essays on Liturgiology and Church History; Mediæval Hymns from the Latin; Hymns of the Eastern Church*, etc. He wrote a number of popular hymns.

Neander (nā-an'dèr), JOHANN AUGUST WILHELM, a Protestant theologian, born of Jewish parents at Göttingen in 1789; died at Berlin in 1850. He was early converted to Christianity, and was appointed extraordinary professor of theology at Heidelberg in 1812. In the same year, however, he accepted an invitation to the University of Berlin, where he spent the remainder of his life in uninterrupted labors for the good of the church and general learning. His chief works are his *Life of Christ*, in refutation of Strauss; his *General History of the Church;* and his *History of the Apostolic Church.*

Neanderthal Man (nā-an'dèr-tal), the fossil remains of a man which were found in a limestone cave in Neanderthal Valley, Prussia, and remarkable for their bestial characteristics. The skull is of peculiar form and less human and more Simian than any other known until very recently. Many archæologists hold it to be distinctive of a type of very ancient cave dwellers, while others maintain that its character is the result of abnormal conditions in the individual. Later discoveries of antique human remains of somewhat similar type, and especially the finding of a still more simian-like skull in Java, go far to sustain the former view.

Neap-tides (nēp-tidz), tides which happen in the middle of the second and fourth quarters of the moon. They are the lowest tides. See *Tide.*

Neath (nēth), a town and river port on the Neath, in South Wales, in the county of Glamorgan, 7 miles E. N. E. of Swansea. It carries on a considerable trade, and the industries include copper smelting, tinplate-working, and the manufacture of chemicals. Near the town are the remains of Neath Castle and Abbey, both erected in the twelfth century. Pop. 17,590.

Nebo (nē'bō), or NABU, an ancient Assyrian and Babylonian deity, lord of the planet Mercury, and ruler

of the hosts of heaven and earth, according to Babylonian inscriptions, especially honored in Borsippa. Statues of Nebo have been found in Nineveh, showing him with long beard and hair, and clad in a long robe.

Nebo.

Nebraska (nē-bras'-kà), one of the United States, bounded on the N. by South Dakota, E. by Iowa and Missouri, S. by Kansas and Colorado, and W. by Colorado and Wyoming. Area 77,530 sq. miles. The greater part of the State consists of gently undulating land with a slight inclination to the eastward. On the N. W. is a desolate tract known as the Mauvaises Terres, of Bad Lands, rich in interesting fossil remains. Timber is scarce. The principal rivers are the Missouri, which forms the boundary on the east; its great affluent, the Platte, which, formed by two main forks, a northern and a southern, both from the Rocky Mountains, traverses the territory in an eastern direction; the Niobrara, which traverses the north and flows into the Missouri; and the Republican fork of Kansas River, traversing the southern part of the State. The climate is temperate, the mean temperature in summer being 70° to 74°, in winter from 22° to 30°. The atmosphere is dry, and the rainfall diminishes from east to west, being 18 inches at North Platte and 31 inches at Omaha. The soil, except in the northwest and southwest, is a deep rich loam underlaid by a porous clayey subsoil, and is thus admirably adapted to withstand drought. The principal crops are maize, wheat, oats, barley, potatoes, alfalfa and hay. The west is mainly adapted to grazing, and stock raising is largely carried on, cattle and horses requiring little protection or hand-feeding during winter. Manufactures are as yet generally restricted to the supply of local wants. The railway system centers in Omaha, the chief city. the Burlington, the Northwestern, and the Union Pacific Railways passing through the State. Limestone, sandstone and gypsum are abundant. The chief towns are Omaha (by much the largest) and Lincoln (the State capital). At the head of the educational establishments stand the University of Nebraska at Lincoln, the University of Omaha, Cotner University at Bethany, Wesleyan University at University Place, and Doane College at Crete. There are graded and high schools supported by general and local taxation, and a generous share of the public lands has been set apart for educational purposes. There are four State normal schools. Nebraska came into the possession of the United States as part of Louisiana in 1808, was recognized as a separate territory in 1854, and admitted into the Union as a State in 1867. The first settlements were trading posts. Pop. (1910) 1,192,214.

Nebraska City, a city, the seat of Otoe County, Nebraska, on the Missouri River, about 35 miles S. of Omaha. It has a good river and railroad trade and a variety of manufactures. Here is the State institution for the blind and the Academy of the Annunciation. Pop. 5488.

Nebuchadnezzar (neb-ū-kad-nez'-ar; in Jeremiah and Ezekiel, *Nebuchadrezzar;* Greek, *Nabuchodonosor*), a king of Babylon, celebrated as the conqueror of Judah. He reigned from 604 to 561 B.C. according to the opinion of modern chronologists, or from 606 to 563 B.C. according to that of older chronologists. He was the son of Nabopolassar, by whom the kingdom of Babylon was definitely made independent of the Assyrian monarchy. In the fourth year of Jehoiakim, king of Judah (605-4 B.C.), he defeated Pharaoh-Necho, king of Egypt, at Carchemish (Circesium), on the Euphrates, after which he subjugated Syria and Palestine, carrying off with him the sacred vessels of the temple and the chief Jews into captivity. He destroyed Tyre in 585, and some years later he invaded and ravaged Egypt. During the peaceful years of his reign he rebuilt in a magnificent manner Babylon and many of the other cities of the empire, and constructed vast temples, aqueducts, and palaces, whose ruins still testify to his grandeur. His insanity and the events preceding are only known to us from the book of Daniel. Several inscriptions relating to his reign have recently been found.

Nebula (neb'ū-la), pl. NEBULÆ, in astronomy, the name given to certain celestial objects resembling white clouds, which in many cases, when observed through telescopes of sufficient power, have been resolved into clusters of distinct stars. As more and more powerful telescopes have been employed, the number of resolvable nebulæ has become greater and greater, and it is probable that many nebulæ irresolvable at

present may yet be shown to be star clusters by telescopes more powerful than those now employed. On the other hand, the spectroscope has shown that many nebulæ, among which are several that had hitherto appeared to be well authenticated clusters, consist, in part at least, of masses of incandescent gas. The recent researches of Mr. Norman Lockyer render it probable that nebulæ include clouds of meteors, which, by their continual impact against one another, produce the heat, light, and gaseous matter that are detected by our telescopes and spectroscopes. A few of the great nebulæ, such as those of Orion, Argo Navis and Andromeda, are visible to the naked eye; but most are telescopic, and of these thousands are now known to astronomers. Nebulæ have been classified as follows:—(1) *Resolvable nebulæ*, and such as apparently only require instruments of increased power to resolve them into separate stars; (2) *Irresolvable nebulæ*, showing no appearance of stars; (3) *Planetary nebulæ*, so called because they slightly resemble in appearance the larger planets; (4) *Stellar nebulæ*, those having in their center a condensation of light; and (5) *Nebulous stars*, a bright star often seen in the center of a circular nebula, or two bright stars associated with a double nebula, or with two distinct nebulæ near each other.

Nebular Hypothesis (neb'ū-lär hī-poth'e-sis), a theory by means of which Laplace (before the existence of nebulous matter in the universe had been discovered by means of the spectroscope) accounted for those features of the solar system which must be regarded as accidental in the Newtonian philosophy. This theory supposes that the bodies composing the solar system once existed in the form of a nebula; that this had a revolution on its own axis from west to east; that the temperature gradually diminishing, and the nebula contracting by refrigeration, the rotation increased in rapidity, and zones of nebulosity were successively thrown off in consequence of the centrifugal force overpowering the central attraction. These zones being condensed, and partaking of the primary rotation, constituted the planets, some of which in turn threw off zones which now form their satellites. The main body being condensed towards the center, formed the sun. The theory was afterwards extended so as to include a cosmogony of the whole universe. Serious objections have been made to the hypothesis and rival theories of recent origin have been advanced.

Necessity (ne-ses'i-ti), a word used in philosophical and theological discussions with varying senses, but very commonly implying the operation of a blind fate or destiny, and absence of free will. See *Will*.

Necho (ne'kō), or NEKU, a king of Egypt, mentioned in 2 Kings xxiii, 29 and Jerem. xlvi, 2. He belonged to the twenty-sixth dynasty; succeeded his father Psammeticus I, and reigned from B.C. 610 to 594. He extended his dominions from the s. of Syria to the Euphrates; defeated Josiah, king of Judah, at Megiddo, but was ultimately driven back by Nebuchadnezzar.

Neck, the part of an animal's body which is between the head and the trunk, and connects them. The bones of the neck in man, and in nearly all other mammals, are the seven cervical vertebræ.

Neckar (nek'är), a river of Germany which rises in the Black Forest, in Würtemberg, and flows through Baden into the Rhine at Mannheim, after a course, including windings, of about 240 miles. It is navigable half its course for small vessels.

Necker (nek'ér), JACQUES, a French minister of finance, born at Geneva in 1732; died in 1804. He became clerk in a Paris banking house in 1750, and afterwards accumulated a large fortune as a banker. In 1776 he received an appointment to the treasury,

[Necker.

the direction of which he retained for five years. Malversation under the preceding reign had caused a large deficit, to which the American war made great additions. Necker endeavored to meet

the exigency by loans and reforms, and above all to fund the French debt and establish annuities under the guarantee of the state. His suppression of abuses had created him many enemies at court, and shortly after the publication of his famous *Compte Rendu*, in which he furnished a clear statement of the condition in which he had found things, of what he had done and what he intended to do, he resigned and retired to Switzerland, where he published his *Administration of the Finances*, which had an immense circulation. The errors of Calonne, who next had the management of the state finances, increased Necker's reputation; and in 1788 he was recalled as controller general. His convictions led him to support the convocation of the States General and the giving a double representation to the *tiers état*. The States General were actually summoned to meet on May 1, 1789; but not long after the advisers of the king succeeded in inducing him to give Necker his dismissal, and to order him to leave the kingdom. No sooner was his removal known than all Paris was in a ferment. The storming of the Bastille followed (July 14), and the king found himself compelled to recall the banished minister. His return to Paris resembled a triumphal procession. His first object was to restore tranquillity and security of person and property. But he was not equal to the political or even the financial crisis, and resigned in September, 1790. He passed the rest of his life in Switzerland, where he occupied himself in writing political and religious treatises. Necker's daughter was the well-known Madame de Staël.

Necromancy (nek'ru-man-si), the divination of the future by questioning the dead. This superstition originated in the East, and is of the highest antiquity. We find mention made of necromancy in the Scriptures, where it is strongly condemned. In the Odyssey Homer has made Ulysses raise the shade of Tiresias from the infernal regions. In many parts of Greece there were oracles of the dead, the origin of which is lost in the obscurity of history. Although this practice has been condemned by the Christian Church from the very first, it has not yet entirely ceased. The term is often extended so as to include the general art of magic.

Necroph'orus. See *Burying-beetle.*

Necropolis (nek-rop'u-lis; literally, 'city of the dead'), a name originally applied to a suburb of Alexandria devoted to the reception of the dead, and hence extended to the cemeteries of the ancients generally. The name has also been given to some modern cemeteries in or near towns.

Necrosis (nek-rō'sis; literally, 'mortification'), a medical term signifying the death of the bone substance. It is a condition of the bone substance corresponding to what gangrene is in the soft parts, thus distinguished from *caries*, which corresponds to ulceration in the soft parts. Necrosis is usually a result of inflammation of the bone, and is often attributed to cold, but frequently it is due to constitutional disease.

Nectandra (nek-tan'dra), a genus of forest trees, natives of South and Central America. See *Greenheart.*

Nectar (nek'tar), in Greek mythology, the drink of the gods, which was imagined to contribute much towards their eternal existence. It was said to impart a bloom, a beauty and a vigor which surpassed all conception, and together with ambrosia (their solid food) repaired all the decays or accidental injuries of the divine constitution.

Nectarine (nek'tär-in), a fruit which differs from the peach only in having a smoother rind and firmer pulp, being indeed a mere variety of peach. See *Peach.*

Nectary (nek'tä-ri), the name given by Linnæus to every part of a flower that contains or secretes a saccharine fluid, or even to every abnormal part of a flower.

Nectocalyx (nek-tō-kal'iks), in zoology, the swimming-bell or disk of a medusa of jelly-fish, by the contractions of which it is propelled through the water.

Needham (nēd'am), a village of Needham township (town), Norfolk County, Massachusetts, 12 miles s. w. of Boston. It has manufactures of hosiery, knit-goods, etc. Pop. of town 5026.

Nedjed. See *Nejd.*

Needell (nē'del), Mary Ann, novelist, born at London, England, in 1830. She published *Ada Gresham* in 1851, and after 1881 numerous novels, the best-known being *Julian Karslake's Secret* (1881); *Stephen Ellicott's Daughter* (1891), and *The Vengeance of James Vansittart* (1895).

Needle (nē'dl), a small instrument of steel, pointed at one end, and having an eye or hole in it through which is passed a thread, used for sewing. From very ancient times needles of bone,

ivory, wood and bronze have been used. The manufacture of steel needles was first introduced into England in the reign of Elizabeth. The operations that an ordinary sewing needle goes through are very numerous, though of late many improvements have been introduced which reduce the number of separate operations, and many of the needle-making processes are performed by machinery at a great saving of time and labor. The chief of the ordinary operations that a sewing needle goes through in their proper order are such as follows:—The cutting of the steel wire into lengths sufficient for two needles; the pointing of these at both ends on a grindstone by fifty or sixty at a time; the cutting of each length through the middle to give two needles; the flattening of the heads by a blow with a hammer; the piercing of the eyes with a punch applied first on one side, then on the other; the trimming of the eyes; the grooving and rounding of the head; hardening, tempering, straightening; polishing, which is done by making some 500,000 needles into a cigar-shaped bundle along with emery and oil and rolling them backwards and forwards under a weight. Modifications of the ordinary sewing needle are used in the various forms of sewing machines, in sail making, bookbinding, glovemaking, darning, staymaking, etc. The name is also applied to implements of iron or steel, bone, wood, etc., used for interweaving or interlacing a thread or twine in knitting, netting, embroidery, jacquard loom weaving, etc., and formed in various ways, according to the purpose for which they are intended; as also to sundry long and sharp-pointed surgical instruments, some employed for sewing, others for other purposes, as in operations for cataract. The small piece of steel pointed at both ends and balanced on a pivot, as in the compass and some forms of telegraphic instruments, is also called a needle, and the term is used for various other objects.

Needle-gun, a breech-loading rifle the cartridge of which contained a small quantity of detonating powder which was exploded by the rapid darting forward of a needle or small spike. It is now superseded by weapons of superior efficiency. See *Rifle*.

Needle-ore, acicular bismuth glance; native sulphide of bismuth, lead and copper occurring imbedded in quartz in long, thin, steel-gray crystals, marked with vertical striæ, and apparently in four or six-sided prisms. It consists of lead 35.8, copper 11, bismuth 36.7, and sulphur 16.5, and usually accompanies native gold.

Needles, The, a cluster of insulated chalk rocks in the English Channel, off the west extremity of the Isle of Wight. They owe their name to their pyramidal and pointed shape. The Needles Lighthouse, on the most westerly of the group, has an occulting light 80 feet above high-water, visible for 14 miles.

Neef (nāf), or Neefs, Pieter, Flemish painter, born at Antwerp in 1570; died in 1651. He excelled in architectural subjects, the figures in his pictures being frequently by Teniers and other masters.

Neenah (nē'na), a city of Winnebago County, Wisconsin, on Fox River, 30 miles N. of Fond du Lac. The river affords water power, and there are manufactures of ploughs, stoves, flour, paper, boots and shoes, machinery, doors, knitted goods, etc. Pop. 5734.

Neer (nār), Aart van der, a Dutch landscape painter, born at Amsterdam in 1613; died in 1683. His chief subjects were canal scenes by moonlight, conflagrations at night, and winter landscapes. His son, Eglon Hendrick, born in 1643, died in 1703, was also an excellent painter, devoting himself chiefly to genre subjects.

Neerwinden (nār'vin-dēn), a village in the province of Liége, 16 miles from Louvain. It is the scene of the defeat of the allied English, Dutch and Austrian armies by the French in 1693, and the defeat of Dumouriez by the Austrians in 1793.

Ne exeat Regno ('let him not go out of the kingdom'), in English law, a writ prohibiting the person against whom it is directed from leaving the kingdom, as when a person who owes an actually due equitable debt meditates going abroad to avoid payment.

Negapatam (neg-a-pa-tām'), a town and chief port of Tanjore District, Madras Presidency. It was an early settlement of the Portuguese; was taken by the British in 1781. Pop. (1911) 60,168.

Negaunee (nē-ga'nē), a city of Marquette County, Michigan, 12 miles S. of Marquette. It is in an iron mining district with very large ore deposits and has extensive iron mining interests with mines and blast furnaces within the city limits. Pop. 8460.

Negligence (neg'li-jens), in law, the omission to do that which ought to be done. When such want of care results in injury to another, or involves a wrong done to society, it renders the party guilty of negligence

liable to either an action for damages or trial for misdemeanor. In law there are recognized three degrees of negligence: *ordinary*, the want of ordinary care or diligence; *slight*, the want of great care or diligence; and *gross*, the want of slight care or diligence. The person charged with negligence must have been under an obligation to exercise care or diligence either assumed by contract or imposed by law. An alleged act of negligence must always be the proximate cause of the injury sustained; but any injury caused to a person by another who at the time is exercising due care is not actionable. The question of negligence is usually one for a jury, and the onus of proof rests on the pursuer, except when the thing resulting from the negligence speaks for itself. A master is responsible for the negligence of his servants, but in no case can redress be had where contributory negligence on the part of the pursuer is proved.

Negrais (nē-grīs), a cape at the s. w. extremity of the coast of Bassein, Lower Burmah.

Negritos (ne-grē'tōz), or NEGRILLOS, a name given to several negro-like races inhabiting the islands, etc., of Southeastern Asia, and often confounded with the Papuan race. The chief tribes are the Aëtas, the indigenous people of the Philippine Archipelago, still inhabiting the interior of Luzon and some other islands; the Samangs of Malacca; and the Mincopies inhabiting the Andaman Archipelago. They are dwarfish in stature, averaging from 4 ft. 6 in. to 4 ft. 8 in. in height; the nose small, flattened or turned up at the apex, and the hair soft and frizzled. They resemble in size and in some other particulars the pigmy tribes of Africa. The various tribes speak distinct and mutually unintelligible dialects. A tribe of the same type has recently been found in New Zealand.

Negro (nē'grō), the name of numerous rivers, both large and small. See *Rio Negro*.

Negroes (nē'grōz), a race of the human species indigenous to the Soudan and Guinea, though the term is often extended so as to cover all the tribes inhabiting Africa from the southern margin of the Sahara as far as the territory of the Hottentots and Bushmen, and from the Atlantic to the Indian Ocean. These tribes are all dark-colored, yellow, copper-red, olive, or dark-brown, passing into ebony-black. The typical negro, however, is described as having a black skin, woolly or crisp hair, a protuberant mouth with thick lips, nose thick and flat, thick narrow skull, flat and receding forehead, hair of the face scanty, thorax compressed, flat buttocks, long arms, knees bent outward, calves weak, and feet comparatively flat with long heels. The brain, though essentially similar to that of the white races, is not so large, and the Negro, as a rule, differs as much from the white in mental as in physical characteristics, though there are many individual exceptions. He is very receptive, and in that which requires imitation he is well developed, but in that which requires independent thought he stands on a low plane. He has less nervous sensibility than the white man and can flourish in climates fatal to the higher races, and the race does not diminish in contact with civilization. The slave system has taken great numbers of Negroes from their native country, mostly to America and the West India Islands, where there has been considerable intermixture of races. More than one-third of all persons of African descent are in the United States, and many of them hold good positions in life. Negroes also rise to superior positions in the West Indies and elsewhere.

The description above given of the characteristics of the typical negro, as seen in Africa, does not apply to the colored citizens of the United States. Several centuries of life in a temperate climate, and amid civilized surroundings, in connection with a considerable infusion of white blood, has largely modified their physical aspect and developed their mental capacity, and in view of the fact of their recent release from the unfavorable conditions of slavery, their progress in various respects has been very promising. Except in color they do not appear to differ essentially in racial characteristics from the whites, while their industrial progress has been very encouraging. In 1863 the negro freed men in the United States owned 9000 houses, operated 15,000 farms, and 2000 places of business, and had accumulated $20,000. In 1913 they owned 550,000 homes, operated 937,000 farms and 40,000 places of business, and had accumulated $70,000,000. In this we have a noteworthy object lesson well worth presenting. The colored citizens of the United States of the last census numbered 9,827,763.

Negro Suffrage. The Thirteenth Amendment, adopted December 18, 1865, made slavery in the United States unconstitutional. The Fourteenth and Fifteenth Amendments conferred upon the descendants of the slaves and upon the descendants of the free Negroes, the constitutional rights which had been denied them under the so-called 'Black Laws,' passed by the dif-

ferent states. After the Fifteenth Amendment of the Constitution was ratified, March 30, 1870, California, Colorado, Connecticut, Delaware, Indiana, Kansas, Kentucky, Maryland, Michigan, Nevada, New Jersey, Ohio, Oregon and Pennsylvania still restricted the suffrage to white persons. In order to make the provisions of the Fifteenth Amendment effective Congress, on May 31, 1870, passed an act, the first section of which declares: "All citizens of the United States who are or shall be otherwise qualified by law to vote at any election by the people in any state, territory, district, county, city, parish, township, school district, municipality, or other territorial division, shall be entitled and allowed to vote at all such elections without distinction, of race, color, or previous condition of servitude, any constitution, law, custom, usage, or regulation in any state, territory, or by or under its authority to the contrary notwithstanding."

Beginning with 1890, the Southern States have by the adoption of constitutional amendments sought to restrict Negro suffrage. Suffrage amendments have been adopted by the Southern States in the following order: Mississippi, 1890; South Carolina, 1895; Louisiana, 1898; North Carolina, 1900; Alabama, 1901; Virginia, 1902; Georgia, 1908; and Oklahoma, 1910. The substance of the laws restricting suffrage is that the prospective voter must have paid his full taxes and then, in order to register, must own a certain amount of property, or must be able to pass an educational test or must come under the 'Grandfather' clause.

Tax Test. Alabama, Arkansas, Florida, Louisiana, North Carolina, South Carolina, and Tennessee require the payment of poll taxes, as a prerequisite to voting. In Georgia all taxes legally required since 1877 must be paid six months before the election.

Property Test. The property requirement in Alabama is forty acres of land in the state or real personal property worth three thousand dollars on which the taxes for the preceding year have been paid. In Georgia it is forty acres of land in the state or five hundred dollars' worth of property in the state. The Louisiana requirement is three hundred dollars' worth of property and payment of personal taxes. South Carolina prescribes three hundred dollars' worth of property on which taxes for the preceding year have been paid. Mississippi, North Carolina and Virginia have no property test.

Educational Test. Alabama requires that the applicant, unless physically disabled, must be able to read and write the Constitution of the United States in English. In Georgia he must, unless physically disabled, be able to read and write the Constitution of the United States in English; or if physically disabled from reading and writing, to 'understand and give a reasonable interpretation' of the Constitution of the United States or of Georgia, when read to him. Louisiana requires that the applicant must be able to read and write and must make an application for registration in his own handwriting. In Mississippi he must be able to understand or reasonably interpret any part of the Constitution of the state. In North Carolina the requirement is the ability to read and write the state Constitution in English. The Constitution of Oklahoma says the applicant must be able to read and write any section of the state Constitution. South Carolina requires ability to read and write the Constitution. Virginia requires that the applicant must make out his application in his own handwriting and prepare and deposit his ballot without aid.

Grandfather Clause. The 'Grandfather' clause permits a person who was not able to satisfy either the educational or property tests to continue a voter for life if he was a voter in 1867 (or in Oklahoma in 1866) or is an old soldier or the lineal descendant of such voter or soldier, provided, except in Oklahoma, that he register prior to a fixed date. The expiration of the date when such persons could register was, in South Carolina, January 1, 1898; Louisiana, September 1, 1898; Alabama, December 20, 1902; Virginia, December 31, 1903; North Carolina, December 1, 1908; Georgia, January 1, 1915. The Oklahoma 'Grandfather' clause was declared invalid in 1915.

Understanding and Character Clauses. Only two states, Georgia and Mississippi, have permanent 'Understanding' and 'Character' clauses. Although in Georgia a person may have neither property nor education he may be permitted to register if he is of good character and understands the duties and obligation of citizenship under a republican form of government. The Mississippi law permits one who cannot read to register if he can understand and reasonably interpret the Constitution when read to him. In Alabama, South Carolina and Virginia the 'Understanding' clause was a part of the 'Grandfather' sections and became inoperative with the 'Grandfather' clause.

Negros (nā'grōs), an island in the Asiatic Archipelago, belonging to the Philippines, lying between Panay and Cebu. Length, 130 miles; area, 4839 sq. miles; pop. 450,776.

Negus (nē'gus), a drink made of port or sherry wine mixed with hot water, sugar, nutmeg and lemon juice; so called from Colonel Negus, the inventor.

Nehemiah (nē-he-mī'à), a distinguished and pious Jew, who was born in captivity, but was made the cup-bearer of Artaxerxes Longimanus, king of Persia. He was sent, B.C. 444, as governor to Jerusalem, with a commission to rebuild the walls and gates of that city. He accomplished his purpose, but not without difficulties, arising partly from the poverty of the lower classes of the people, and partly from opposition of the Ammonites and other foreign settlers. The *Book of Nehemiah* contains Nehemiah's account of his proceedings, with other matter which forms a supplement to the narration contained in the *Book of Ezra*.

Neilgherry Hills (nēl'ge-ri; properly *Nilgiri*, that is 'blue mountain'), a district and range of mountains in Madras Presidency, South Hindustan. The district is bounded by Mysore, Coimbatore and Malabar; area, 957 sq. miles. It consists of a nearly isolated plateau, with an average elevation of over 6000 feet. There are six peaks over 8000 feet in height, the highest being Dodabetta, 8760 feet. The chief town is Utakamand (Ootacamund), which is a valuable sanitarium. The district produces coffee, tea and cinchona.

Neisse (nī'sé), a fortified town, district of Oppeln, Prussian Silesia, on a river of same name, 47 miles S. S. E. of Breslau. It is generally well built, and has some interesting buildings, especially the fine church of St. James, completed in 1440. Its manufactures are unimportant, but it has an active trade. Pop. (1905) 25,394.

Neith (nēth), or NEITHA, an Egyptian goddess who was worshiped especially as a local divinity at Sais, in Lower Egypt. She had some of the characteristics of the Greek Athēnē, or Minerva.

Nejd, or NEDJID (ned'jed; Arab. 'elevated country'), a term sometimes used as an element in Arabic place names, but used absolutely to signify the country in the interior of Arabia forming the central Wahabi kingdom. A great part of its surface is sandy desert interspersed with fertile spots. The more elevated districts feed immense droves of camels and the best breeds of Arab horses. Its chief town is Riad (28,000 inhabitants), the Wahabi capital.

Nejin, NIEJIN, or NYESHIN, a town in Russia, in the government of Czernigov, on the left bank of the Oster, about 80 miles N. E. of Kiev. Pop. 43,030.

Nelaton (nā-là-tōn), AUGUSTE, a noted French physician and surgeon, born in 1807; died in 1873. He studied medicine at Paris, and graduated as doctor in 1836. Soon after he was appointed hospital surgeon and private lecturer in the faculty of medicine in the University of Paris. From 1851 to 1867 he was professor of clinical medicine. In 1866 he was appointed surgeon to Napoleon III, and was created a senator by imperial decree in 1868. He was specially renowned for his skill in operating for the removal of calculus, and was the inventor of a new method of operating in this disease. He published several works on surgery.

Nellore (nel-lor'), a town in India, in the Presidency of Madras, capital of district of the same name. It is a tolerably clean and airy town, and has railway and canal communication with other parts of the country. Pop. 32,040. The district lies on the Coromandel coast; area, 8739 sq. miles. It is famous for its breed of cattle.

Nelson (nel'sun), a town and provincial district in New Zealand, in the northwest of South Island. The town, which is a seaport, is situated on a small harbor at the bottom of Blind Bay, in the county of Waimea. It has a cathedral and churches of various denominations, a literary institute and museum, theater, and numerous fine public and business buildings. Leather making, brewing, fruit-preserving, etc., are among the industries. Steamers ply regularly to all the neighboring ports. Pop. 8164. The district has an area of 10,468 sq. miles. Although agriculture is now carried on to a considerable extent, still the great wealth of the district lies in its minerals. Unlimited beds of excellent iron ore, lead and copper ores, coal and gold, both alluvial and quartz, are all wrought to a considerable extent.

Nelson, or NELSON IN MARSDEN, a town in N. E. Lancashire, England, 3½ miles N. E. of Burnley. There are various manufactories, and coal is worked in the neighborhood. Pop. (1911) 39,485.

Nelson, HORATIO, VISCOUNT, a celebrated British admiral, was born in 1758, at Burnham Thorpe, in Norfolk (where his father was rector); died in 1805. At the age of twelve he entered the navy as a midshipman, and in 1773 accompanied Commodore Phipps in an ex-

pedition towards the north pole. In 1777 he was made a lieutenant, and in 1779 raised to the rank of post-captain. He distinguished himself in an attack on Fort Juan, in the Gulf of Mexico, and on other occasions, and remained on the American station till the conclusion of peace. He afterwards commanded the *Boreas* frigate, and was employed to protect the trade of the Leeward Islands. On the commencement of the war with the French Republic he was made commander of the *Agamemnon*, of sixty-four guns (1793), with which he joined Lord Hood in the Mediterranean, and assisted at the siege of Bastia (May, 1794). At the siege of Calvi (July 10, 1794) he lost an eye. For his gallantry at the battle of Cape St. Vincent (Feb. 14, 1797) he was made rear-admiral of the blue, and appointed to the command of the inner squadron at the blockade of Cadiz. His next service was an attack on the town of Santa Cruz, in the Island of Teneriffe, in which he lost his right arm. In 1798 he joined Lord St. Vincent (Admiral Jervis), who sent him to the Mediterranean to watch the progress of the armament at Toulon. Notwithstanding his vigilance, the French fleet which conveyed Bonaparte to Egypt escaped. Thither Nelson followed, and after various disappointments he discovered the enemy's fleet moored in the Bay of Aboukir, where he obtained a most complete victory, all the French ships but two being taken or destroyed (August 1, 1798). This achievement was rewarded with the title of *Baron Nelson of the Nile* and a pension of £2000. His next service was the restoration of the King of Naples, which was accompanied with circumstances of revolting cruelty, generally attributed to the influence of Lady Hamilton (which see), the wife of the English ambassador. In 1801 he was employed on the expedition to Copenhagen under Sir Hyde Parker, in which he effected the destruction of the Danish ships and batteries. On his return home he was created viscount. When hostilities recommenced after the Peace of Amiens Lord Nelson was appointed to command the fleet in the Mediterranean, and for nearly two years he was engaged in the blockade of Toulon. In spite of his vigilance the French fleet got out of port (March 30, 1805), and being joined by a Spanish squadron from Cadiz, sailed to the West Indies. The British admiral hastily pursued them, and they returned to Europe and took shelter at Cadiz. On the 19th of October the French, commanded by Villeneuve, and the Spaniards by Gravina, ventured again from Cadiz, and on the 21st they came up with the British squadron off Cape Trafalgar. An engagement took place, in which the victory was obtained by the British, but their commander was wounded in the back by a musket-ball, and shortly after expired. His remains were carried to England and interred in St. Paul's Cathedral. Monuments to his memory have been erected in various cities.

Admiral Lord Nelson.

Nelson, Knute, statesman, born in Norway in 1843, came to the United States in 1849. He took part in the Civil war, became a lawyer, was elected to the Wisconsin and Minnesota legislatures, and was a member of Congress 1883-89. He was governor of Minnesota 1892-95 and was elected to the United States Senate in 1895. He is still a member, ranking among the Progressives.

Nelson River, a river of Canada, which issues from Lake Winnipeg, and after a tortuous course of about 350 miles, during which it passes through a series of lakes, falls into Hudson Bay. It is navigable for small steamers for about 80 miles.

Nelsonville (nel'son-vil), a village of Athens County, Ohio, on the Hocking River, 14 miles N. W. of Athens. The mining of coal is its principal business. It has a foundry and machine shops, brick and clay works, and several mills. Pop. 6082.

Nelumbium (ne-lum'bi-um), a genus of aquatic plants inhabiting the fresh waters of the temperate parts of the world, type of the nat. order Nelumbiaceæ, having large polypetalous flowers with numerous stamens. The best-known species is *Nelumbium speci-*

trum, the Hindu and Chinese lotus, a magnificent water-plant of the rivers and ditches of all the warmer parts of Asia, the Malay Archipelago, Australia, and also found in the Nile (formerly at least). The numerous canals of China are filled with it, its tubers being there used as a culinary vegetable. It is a most beautiful plant, with peltate leaves and handsome rose-colored flowers on tall stalks, and is frequently cultivated in hothouses. In Asia it is generally deemed sacred, and figures in religious rites. *N. luteum*, the yellow water-bean of the southern United States, has starchy rhizomes, with tubers like those of the sweet potato, which are used for food.

Ripe receptacle of *N. speciosum*.

Nelumbium speciosum (Lotus).

Nemathelminthes (nem-a-thel-min'-thez), the division of Scolecida that includes those parasitic worms which possess bodies of rounded or cylindrical shape. Among the most familiar are the *Gordiacĕa*, or 'hair-worms.' These possess slender hair-like bodies, and are found as parasites in the interior of beetles and other insects during the first stages in their development. On arriving at sexual maturity they escape from the bodies of their hosts and seek the water of pools, in which the eggs are deposited in the form of lengthened chains. The embryos produced from these ova are provided with a retractile proboscis and hooks, by means of which they penetrate the bodies of insects, and there develop into the sexually mature worms. Superstition formerly credited horsehairs, introduced into water, with the property of being transformed into these living creatures. Another order of the Nemathelmia is that of the *Nematōda*, which includes several familiar forms, as the *Ascāris*, or common 'round-worm,' of the human intestines; the *Trichina*, famous for its fatal effects in man; the *Filaria*, or 'Guinea-worm.' The Nematoda, although mostly parasitic, also comprise many free and non-parasitic forms.

Nematocyst (nem-at'o-sist), in physiology, a 'thread-cell' of the Cœlenterata, that is, a cell or minute sac, in the interior of which is a long filament, often serrated or provided with spines, and capable of being swiftly protruded. It is to their nematocysts that the power of stinging possessed by many of the Cœlenterata is due.

Nemato'da. See *Nemathelmia*.

Nemean Games, (ne-mē'an), Greek games, held in the valley of Nemea in Argolis, where Hercules is said to have killed the Nemean lion. They recurred ordinarily every second year, and were similar in character to the other Greek games. (See *Games*.) Eleven of Pindar's odes are in celebration of victors at the Nemean games.

Nemertida (nem-er'ti-da), a group of the Scolecida (Annuloida), represented by the 'ribbon-worms' found on the sea-coasts of various countries. They possess flat, ribbon-like bodies, which, as in the *Borlasia* of the British coasts, may attain a length of more than 15 feet. Some of the species of the type-genus *Nemertes* attain a length, in their extended state, of 30 or 40 feet, which they can suddenly contract to the length of 3 or 4 feet.

Nemesis (nem'e-sis), a female Greek divinity who appears to have been regarded as a personification of the righteous anger of the gods, inflexibly severe to the proud and insolent, *i.e.*, retributive justice. In the theogony of Hesiod she is the daughter of Night, the avenging Fate who checks and punishes the favorites of Fortune.

Nemi (nā'mē), a lake in Italy, about 17 miles south of Rome. It is evidently the crater of an extinct volcano; has a circuit of 5 miles, and discharges its waters through an ancient tunnel. A village of the same name lies on the N. E. shore.

Nemours (nē-mōr), a French town in the department of Seine-et-Marne, 10 miles south of Fontainebleau, of some historical importance. Pop. (1906) 4814.

Nen, an English river, rises in the N. W. of Northamptonshire, and falls into the Wash after a course of 70 miles.

Nenagh (nen'ä), a town in Ireland, county of Tipperary, 28 miles northeast of Limerick. It has the remains of an old castle, and does a good general trade. Pop. about 4700.

Nennius (nen'ni-us), the supposed author of a collection of chronicles and genealogies styled *Historia Britonium*, written in Latin, and reaching down to A.D. 655. The author is supposed to have been a monk at Bangor in Wales. The authorship as well as the authenticity of Nennius have been much disputed.

Neocomian (nē-ō-kō'mi-an), in geology, a term applied to the lower greensand and Wealden.

Neo-Darwinism, the Darwinian theory as held by many more recent scientists. A number of difficulties have arisen in the study of the theory of natural selection, and several hypotheses have been advanced in their explanations, so that, though the theory is still strongly maintained, it has been modified in important details by the Neo-Darwinists.

Neogene (nē'ō-jēn), in geology, a name given by some geologists to the Pliocene and Miocene tertiaries to distinguish them from the older Eocene strata.

Neo-Lamarckism, the views at present entertained, especially by American scientists, concerning the Lamarckism theory of evolution. This maintains that change in species is largely due to 'use and effort,' the continued attempts of animals to take the best advantage of surrounding conditions having led to gradual changes of structure fitting them to external circumstances. Many modern scientists hold a modified view of this doctrine.

Neolithic (nē-ō-lith'ick), in archæology, a term applied to the more recent of the two periods into which the stone age has been subdivided, as opposed to *palæolithic*. During this period there is found no trace of the knowledge of any metal excepting gold, which it would seem had sometimes been used for ornaments. The Neolithic stone implements are finely shaped and polished, as contrasted with the roughly wrought palæolithic stones, and are found in connection with the remains of extinct animals.

Neomorpha. See *Huia-bird*.

Neon (nē'on), a recently discovered gaseous chemical element existing in the air. It was found by Ramsay and Collie, English physicists, in 1898, who separated it from argon while experimenting with liquid air. Its chemical number is 14.67, and it has the inertness of argon.

Neophron (nē'ō-fron), a genus of birds of the vulture family, one species of which (*N. percnopterus*) inhabits Southern Europe, Egypt and Asia. It is known as the Alpine or Egyptian vulture, Pharaoh's chicken, etc.

Neo-platonism. See *New Platonists*.

Neotropical (nē-ō-trop'i-kal), a term applied to one of the six regions into which zoologists divide the surface of the earth, based on their characteristic fauna or collection of animal life. The Neotropical region includes Central America south of the Isthmus of Tehuantepec and South America.

Neottia (nē-ot'sha), a small genus of Orchidaceæ, readily distinguished by its habit, all the species being leafless brown-stemmed plants, with sheathing scales in place of leaves.

Neozoic (nē-u-zō'ik; Gr. *neos*, new, *zōē*, life), in geology, a name under which Prof. E. Forbes proposed to include all the strata from the beginning of the Trias up to the most recent deposits; the *Mesozoic* and *Cainozoic* of other palæontologists. Forbes suggested this classification on the ground that while there is a widely-marked distinction between Palæozoic and Mesozoic fossils, there is no essential difference between Mesozoic and Cainozoic.

Nepa (nē'pa), a genus of hemipterous insects, popularly known by the name of 'water-scorpions.'

Nepal (ne-pal'), NIPAL', or NEPAUL', a small independent state situated on the N. E. frontier of Hindustan, on the southwest slope of the highest part of the Himálaya range, between lat. 26° 25′ and 30° 17′ N., and lon. 80° 61′ and 88° 14′ E.; area, about 54,000 square miles. The country is a table-land from 3000 to 6000 feet above the level of the sea. It contains within its boundaries the highest mountains in the world—Mount Everest, Dhawalagiri, and on its eastern borders Kanchinjinga. From the mountains southwards, the land gradually descends, forming four distinct terraces, differing in climate and vegetation. The climate is on the whole temperate except in the most elevated districts in the north, where it is very cold. The most important rivers are the Ghogra or Kanar, the Gandak and the Kusi, all of which rise in Tibet on the north beyond the Himálayas. Magnificent forests of sal, sisoo, and toon trees stretch along the declivities of the lower hills into the adjacent plains. The forests higher up exhibit a greater variety, gradually as-

suming more and more of an Alpine character. The principal products are rice, wheat, hemp, cotton, tobacco and madder. Pasturage is on the whole scarce and indifferent. The sheep and goats, however, have fine wool. Horses are imported from Tibet. The wild animals are elephants, black bears of great size, hogs, hog-deer, foxes, jackals and a few tigers. The manufactures of Nepal are confined chiefly to coarse cotton cloth. The trade is chiefly carried on with British India and Tibet. The inhabitants are descended from successive tides of invaders, the Goorkhas (which see) and Newars predominating. The government is despotic, the Maharaja being the nominal ruler only, as the supreme power is in the hands of the prime minister. A British resident is stationed at Khatmandu, the capital. Pop. estimated by the natives to be about 5,200,000.

Nepenthe (ne-pen'the), a drug which was fabled by the ancient poets to banish the remembrance of grief and to cheer the soul. It is thought by many to have been opium.

Nepenthes. See *Pitcher-plant.*

Nepeta (nep'e-ta), a genus of labiate plants, of which the catmint is a typical species.

Nephelin (nef'e-lin), or NEPH'ELITE, a mineral found mixed with other substances, in plutonic or volcanic rocks, in small masses or veins, and in hexahedral crystals. It is usually white or yellow.

Nephe'lium. See *Litchi, Longan.*

Nephrite (nef'rit), a mineral, an aluminous variety of amphibole among the bisilicates, of a leek-green color, massive, and in rolled pieces, remarkable for its hardness and tenacity. It was formerly worn as a remedy for diseases of the kidneys. A unisilicate, zoisite, is also spoken of as nephrite, as is jade. All three are capable of fine polish, and have been used since prehistoric times for ornaments, weapon-handles, and even weapons.

Nephthys (nef'this), an Egyptian deity, the wife of Seth. Her proper sphere was the nether world, though she occurs in the upper world as the instructress of Horus. She is associated as one of a tetrad with Osiris, Isis and Horus. She was called by the Greek writers *Teleutē* (End), *Aphroditē* and *Nikē* (Victory).

Nepomuk (nā'po-mōk), JOHANN VON, the patron saint of Bohemia. He was born at Pomuk in Bohemia about 1330; was martyred in 1393. In 1378 he became court preacher to King Wenceslaus (Wensel), but incurring the displeasure of that monarch he was cruelly tortured and thrown from the bridge over the Moldau into the river (1393). In the course of the fifteenth, sixteenth and seventeenth centuries many legends gathered round his name, and in 1729 Benedict XIII canonized him. The day consecrated to his memory is the 16th of May.

Nepos. See *Cornelius Nepos.*

Neptune (nep'tūn), the chief marine divinity of the ancient Romans. When the Greek mythology was introduced into Rome he was completely identified with the Greek Poseidōn, all the traditions relating to whom were transferred by the Romans to their own deity. In art he is usually represented as armed with a trident, and the horse and the dolphin are his symbols. See *Poseidōn.*

Neptune, in astronomy, the most distant of the known planets, its mean distance from the sun being 2,791,000,000 miles. The eccentricity of its orbit is .00872; its inclination to the plane of the ecliptic is 1° 47′. Its apparent diameter is about 2.7″. Its real diameter is estimated at 34,800 miles, and it seems to have very little polar compression. Its mass is about 16⅔ times that of the earth, and it revolves round the sun in 164.6 years. It has one satellite, whose period is 5 days 21 h. 2 m. 44s., and whose mean distance from the planet is 230,000 miles. Neptune was discovered in 1846 in a position indicated independently by Leverrier and Adams, and deduced from a series of recondite mathematical calculations to find a body which could account for the long-observed perturbations of Uranus.

Neptunian Theory, a name given to a geological theory of Werner's, which referred the formation of all rocks and strata to the agency of water; opposed to the *plutonic, igneous,* or *Huttonian theory.*

Nérac (nā-rak), a town of France, department of Lot-et-Garonne, 16 miles W. S. W. of Agen, on the banks of the Baise. Here Henry IV held his court when King of Navarre, and Calvin and other reformers found an asylum with Queen Margaret. Pop. 4055.

Nerbudda, or NARBADA (ner-be'dā), a river of Hindustan, which rises on the northwest confines of the ancient territorial division of Gondwana, in the Central Provinces, flows first west and northwest across a plateau, then west, inclining gently to the south,

forming part of the boundary between the Central Provinces and Indor, and falls into the Gulf of Cambay after a course of about 800 miles. In religious sanctity it ranks second only to the Ganges. Nerbudda is also the name of a division of the Central Provinces of India; area, 17,513 sq. miles.

Nerchinsk (nyer'chinsk), a Siberian mining town, province of Transbaikal, 540 miles E. of Irkutsk. The neighborhood yields gold, silver, lead, iron and tin, and a considerable fur trade is carried on. Pop. 6713.

Nereidæ (ne-rē'i-dē), NE'REIDS, the sea-centipedes, of which the genus *Nereis* is the type.

Nereïds (nē're-ids), in classical mythology, sea nymphs, daughters of Nereus and Doris, and constant attendants on Poseidon or Neptune. They are represented as riding on sea-horses, sometimes with the human form entire, and sometimes with the tail of a fish. They were distinguished on the one hand from the Naiads or the nymphs of fresh water, and on the other hand from the Oceanides or nymphs of the ocean.

Nereïs (nē're-is), a genus of dorsibranchiate annelids, consisting of worm-like animals with long segmented bodies, antennæ or feelers, eyes when distinct four in number; mouth usually with horny jaws. Some of the species are found in most seas. One species, *N. prolifera*, propagates by spontaneous division, the hind part of the body being gradually transformed into an additional animal.

Nereocystis (nē-re-ō-sis'tis), a seaweed of the nat. order Laminariaceæ, found on the northwestern shores of America and opposite shores of Asia, remarkable for the stems, which attain the length of 45 fathoms, swelling at the top into large cysts or bags filled with liquid; these becoming entangled form large floating islands on which sea-otters rest.

Nereus (nē'rūs), in classical mythology, an inferior divinity of the sea, the progenitor of the Nereids, a god subordinate to Poseidon (Neptune). In the ancient works of art, and also by the ancient poets, he is represented as an old man, with a wreath of sedge, sitting upon the waves with a scepter in his hand.

Nergal (ner'gal), the god of war among the ancient Babylonians.

Neri (nā'rē), ST. FILIPPO DE', the founder of the Congregation of the Oratory in Italy, was born in Florence in 1515, of a noble family; died in 1595. He early devoted himself to the study of theology and the canon law; established hospitals for the relief of pilgrims and the destitute sick, and founded the order of 'Priests of the Oratory,' which was approved by Gregory XIII in 1595. He was canonised in 1622.

Neriad (ner-i-ad'), a town of India, Kaira district, Presidency of Bombay, and a station on the Bombay, Baroda and Central India Railway, 35 miles N. W. of Baroda. It is the center of an extensive tobacco trade. Pop. 28,304.

Nerium. See *Oleander*.

Nero (nē'rō), LUCIUS DOMITIUS AHENOBARBUS (after his adoption by the Emperor Claudius called *Nero Claudius Cæsar Drusus Germanicus*), Roman emperor, the son of Cneius Domitius Ahenobarbus and Agrippina, the daughter of Germanicus. He was born in 37 at Antium, and after the marriage of his mother, in third nuptials, with her uncle, the Emperor Claudius, was adopted by that prince, and married to his daughter Octavia. When Nero was about seventeen years of age his abandoned mother poisoned her husband, Claudius, and succeeded in raising her son to the throne, over whom she expected to exercise the

Nero.

most absolute control. Nero became Emperor in 54, and the year following disposed of the rightful heir, Britannicus, by poison. For the first few years his public conduct, under the control of Burrhus and Seneca, was unexceptionable; in private, however, he disgraced himself by the most odious vices, and his mother endeavored to retain her influence by shamefully complying with his inclinations. In 59 Nero caused this detestable woman to be murdered, and then, fearing no rival in power, gave full scope to the darkest traits of his character. In 62 he repudiated his wife Octavia. In 64

the burning of Rome occurred, which has been charged, not without probability, upon Nero himself, who, however, accused the Christians of the act, and made it the occasion of the most dreadful cruelties towards them. His debaucheries and cruelties occasioned an almost general conspiracy against him, known as that of Pisо, in 65, the discovery of which led to more tortures and bloodshed. The revolt of Vindex was also suppressed. That of Galba in 68 succeeded, and Nero escaped arrest by stabbing himself, being then in the thirty-first year of his age and the fourteenth of his reign. He was a lover of arts and letters, and possessed much taste as a poet and histrionic performer.

Nerthus (nêr'thus), an ancient German goddess, regarded as representing the earth.

Nerva—Antique Gem.

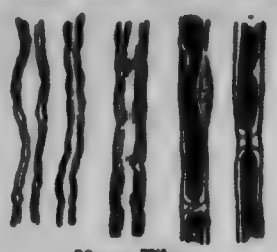
Nerva (nêr'va), the successor of Domitian, and one of the most virtuous of the Roman emperors. He was born in Umbria in 32 A.D.; died A.D. 98. He was twice consul, and was elected emperor on the death of Domitian in 96. He adopted Trajan, who succeeded him.

Nerve (nêrv), NERVOUS SYSTEM. A nerve is one of the fibers which proceed from the brain and spinal cord, or from the central ganglia of lower animals, and ramify through all parts of the body and whose function is to convey impulses resulting in sensation, motion, secretion, etc. The aggregate of these nerves, and the centers from which they proceed, forms the nervous system, the medium through which every act or detail of animal life is inaugurated and directed. The essential idea of any nervous system involves the necessary presence, firstly, of a *nerve center* or *centers*, which generate the nervous force or impulse; secondly, of conducting fibers or cords, the *nerves;* and thirdly, of an *organ*, *part*, or *structure* to which the impulse or impression may be conveyed. The nerve centers of man and vertebrates generally are disposed so as to form two chief sets, which are to be regarded as essentially distinct. The brain and spinal marrow together (see *Brain*) constitute the first of these centers, and are collectively included under the name *cerebro-spinal system* or *axis*. The second system is the *sympathetic* or *ganglionic*. From each of these systems nerve cords are given off—the *cerebral* and *spinal* nerves from the former; and the so-called *sympathetic* fibers from the latter. The brain and spinal cord are contained within the continuous bony case and canal formed by the skull and spinal column; while the chief masses of the sympathetic system form an irregularly disposed chain, lying in front of the spine, and contained within the cavities of the thorax or chest and abdomen. The general functions of the cerebro-spinal system are those concerned with volition and muscular movements, with the control of the senses, and in higher forms with the operations of the mind. The nerves of the sympathetic system in chief are distributed to the viscera, such as the heart, stomach, intestines, blood-vessels, etc.; and the operation of this system is in greater part of the involuntary kind, and without the influence or command of the will. The cranial or cerebral nerves pass from the brain through different openings in the skull, and are all in pairs, the first pair being the *olfactory* nerves or nerves of smell; the second, the *optic* nerves, or nerves of sight; while others have to do with hearing, taste, general sensibility, and muscular motion. The spinal nerves, after issuing from their openings in the vertebral column, split into two divisions, one of which proceeds to supply parts behind the spine, while the other passes towards the front. The first eight spinal nerves on each side are called *cervical*, the next twelve are *dorsal*, the next five *lumber*, then five *sacral*, and one *coccygeal*.

All nervous structures consist of two elements, *nerve cells* and *nerve fibers*. The cells and fibers are combined and associated in various ways, and are imbedded in and supported by fine connective tissue so as to form a connected structure. The cells vary in size from $\frac{1}{1000}$ to $\frac{1}{100}$ of an inch, and consist of masses of protoplasm containing a nucleus and nucleolus. Processes or poles pass from the cell, branching outward. Nerve fibers are of a glossy transparency and of a tubular form. They consist of a rod passing down the center, called the axis-cylinder, which is surrounded on all sides by a white substance, the whole being inclosed in a delicate sheath (*neurilemma*). The axis-cylinder is a continuation of the nerve cell process, and acts in an analogous manner to an electric conductor. The nerve fibers may exhibit a diameter so great as the $\frac{1}{100}$th of an inch; but their average breadth may be stated to vary from $\frac{1}{5000}$th to the $\frac{1}{2000}$th

of an inch. The largest fibers are those of the nerve trunks themselves; and they diminish in size in the neighborhood of the nerve centers—brain and spinal marrow—and as they approach to the periphery of the body or to their ultimate terminations. The nerve fibers of the brain and spinal marrow do not exhibit a limiting membrane; and in the gray matter of the brain and cord the fibers are of exceedingly small size, not exceeding the $\frac{1}{10000}$th or $\frac{1}{15000}$th of an inch in diameter.

The general functions of nerve fibers may be briefly considered under two aspects. The fibers may convey impressions *from* the brain or nerve centers *to* their peripheral extremities, or to the parts to which they are distributed. Or secondly, they may transmit impressions *from* the periphery, or from the parts they supply, *to* their centers. A double series of nerve fibers, each set subserving one or other of the preceding functions, exists in the cerebro-spinal as well as in the sympathetic nervous system. These series are therefore known as *sensory*, *efferent*, or *centripetal* nerves, when they transmit impressions from their peripheral extremities to the brain or centers; and as *motor*, *efferent*, or *centrifugal* nerves, when they carry impressions from the centers to their peripheral terminations. *Stimuli* of various kinds applied to the nerves arouse the so-called *excitability* of the fibers, and through this property nerves convey impressions thus made upon them. Impressions have been calculated to pass along a nerve at the rate of about 200 feet per second. Nerve fibers in any case—motor or sensory—can carry one kind of impulse only, corresponding to the kind of fiber. In certain nerves the impulses or impressions are of a limited or specialized kind, as in the nerves of special sense—for example, sight, hearing, smell—whereby certain distinct sensations, of light, sound, or odors, are produced. And such nerves, therefore, respond only to stimuli of a special kind. The various nerve centers of the body which originate, or at any rate direct and dispose, the nerve force, may be viewed as simply ganglia, or as collections of ganglia, or nervous masses. The brain itself falls under this latter division. The general functional relations [illegible] between the nerve centers and [illegible] may be simply illustrated by [illegible] phenomena comprehended under the



Nerve Fibers.

FACIAL NERVE

(1) The facial nerve at its emergence from stylo-mastoid foramen; (2) temporal branches communicating with (3) the frontal branches of the fifth or trifacial nerve; (4) infra-orbital branches communicating with (5) the infra-orbital branches of the fifth nerve; (6) maxillary branches communicating with (7) the mental branch of the fifth nerve; (8) cervico-facial branches; (9) the spinal accessory nerve giving off a branch to the trapezius muscles.

name of *reflex action*. When a peripheral nerve fiber is irritated a sensory or centripetal impression is conveyed towards the nerve center. Arriving at the center the impression is converted into a motor or centrifugal one, and travels along the motor nerve fibers, to excite, it may be, a muscle or other part to action. The general functional relation of the nervous system may be summarized by stating that its functions comprehend the reception and distribution of impressions; that these impressions originate either from influences acting on the periphery, or from the nerve centers, brain, or mind; that these impressions respectively influence or stimulate the mind or nerve centers, and the muscles or secreting structures; and lastly, that all nervous phenomena are exerted through, or accompanied by, nervous action, and that this latter is, so far as physiology has yet been able to determine, of a uniform and similar kind. See also *Eye*, *Ear*, *Nose*, etc.

The Invertebrata possess no such specialization of the nervous centers as is

seen in Vertebrates, in which the brain and spinal cord are inclosed within their bony case and canal, and thus shut off from the general cavity of the body. The great and distinctive feature between the nervous system of Vertebrata and that of

Various Forms of Nerve Cells.

lower forms consists in the partial or complete absence of a defined or chief nervous center, through which consciousness may intervene to render the being intelligent, and aware of the nature of the acts it performs.

Nervii (nêr'vi-i), an ancient people of Gallia Belgica, famous for the stand they made against Cæsar's advance in B.C. 57 and 54. They submitted to the Romans in B.C. 53. Their territory was coextensive with the old diocese of Cambrai.

Nervous Diseases (nêr'vus diz-ē'zuz), are diseases due either to actual changes in the structure of nerve fibers or nerve centers, or to some irregularity of nerve function without actual structural change. Thus nervous diseases may be due to inflammation or degeneration of nerve substance; to the pressure on some part of the nervous system of tumors, effused blood, or other fluid; to the death of some part by the cutting off of its blood supply, etc.; or may be the result of lowered nervous action as a part of general bad health.

Nervous System. See *Nerve.*

Nervures (nêr'vūrz), in entomology, the corneous tubes which form prolongations of the tracheæ or air-vessels of insects, and which help to expand the wing and keep it tense. The term is applied in botany to the veins or nerves of a leaf.

Ness, a cape or headland; in Britain a frequent element in the names of points of land projecting into the sea. It is of Norse origin.

Ness, Loch, a lake of Scotland, in Inverness-shire, on the line of the Caledonian Canal. It is long and narrow, stretching S. S. W. and N. N. E. about 22 miles, with a breadth varying from 1½ to 2 miles. Except at the extremities, where it shallows, its depth is from 100 to 130 fathoms. The outlet of the lake is by the river Ness into the Moray Frith.

Nest, the abode or habitation, varying greatly in form, materials and situation, constructed by birds, chiefly for the purposes of incubation and the rearing of the young. The nests of birds are of the most diverse character, some birds making little or no nest, while others construct receptacles for the eggs requiring a great amount of skill and industry. The materials used are also extremely various, being such as mud or clay, twigs or branches, leaves, grass, moss, wool, feathers, etc. Some birds, for the sake of protection, excavate burrows in banks or sandy cliffs in which to make their nests. Many mammals also are nest-builders, notably mice, moles, dormice, squirrels, foxes, weasels, badgers, rabbits, etc.; and nests are also constructed by certain fishes, reptiles, crustaceans, insects, etc. See *Birds' Nests, Edible.*

Nestor (nes'tur), one of the Greek heroes at Troy, son of Neleus, King of Pylos. He took part in the hunting of the Calydonian boar, and in the Argonautic expedition. He is noted as the wisest adviser of the chiefs before Troy, after the fall of which he retired to Pylos, where he lived to a great age.

Nestor, a Russian historian, born about 1056, was a monk at Kiev, and died after 1116. He wrote a chronicle in his vernacular tongue, which has been the foundation of Slavonic history.

Nestorians (nes-tō'ri-anz), a Christian sect of Western Asia, named from their founder Nestorius (see next article), formerly of greater importance than they are at present. One portion of them are united with the Roman Catholic Church though using the Greek ritual. They are commonly known as Chaldæan Christians, and have a patriarch, residing at Diarbekir. The larger body of them remain as a distinct sect, in Mesopotamia, Syria, Persia, etc. They recognize only three sacraments, baptism, the Lord's supper, and ordination; and their priests are allowed to marry. There is a Nestorian body in India called Christians of St. Thomas.

Nestorius (nes-tō'ri-us), heresiarch, was presbyter at Antioch

and bishop of Constantinople from A.D. 428 to 431. He incurred the charge of heresy by maintaining that in the person of Christ the two natures were not so united as to form but one person. Cyril of Alexandria, at the council of Ephesus in 431, procured the condemnation of the doctrine taught by Nestorius and the deposition of the patriarch. He was banished to the deserts of Egypt, where he suffered much and died (440). Numerous extracts from several of his works, entire epistles, and some sermons are extant. His followers, called Nestorians, were persecuted by several Greek emperors in succession.

Net, a term applied to that which remains of a weight, quantity, etc., after making certain deductions. Thus *net weight* is the weight of merchandise after allowance has been made for casks, bags, or any inclosing material.

Net, an open fabric made of thread, twine, or cord, woven into meshes of fixed dimensions, firmly knotted at the intersections. Nets are used for a great variety of purposes, as for protecting fruit trees, for collecting insects, for hammocks, screens, etc., but chiefly for hunting and fishing. The chief kinds of nets used in fishing are the trawl, the drift, the seine, the kettle or weir, and the trammel or set nets. The trawl is a triangular bag with an arrangement for keeping its mouth open, drawn along the bottom of the water. The drift and seine nets are very long in proportion to their breadth, and differ from one another only in the manner in which they are employed. The seine has a line of corks along one of its long borders, and a line of leaden weights along the other, so that when thrown into the water it assumes a perpendicular position. It is used near the shore, being dragged to land with any fish it may inclose, by ropes fastened to the ends. The drift-net is not loaded with lead, but floats in the water, and is used especially in herring fishing, the fishes as they drive against it becoming caught by the gills. Kettle and weir nets are structures fixed on stakes placed among the coast between high and low water. Trammel or set nets are also fixed between stays, but act like drift-nets. Formerly all nets were made by hand, but since 1820, when James Paterson established a machine-net factory at Musselburgh, hand-made nets have been superseded. Wire nets are used for garden purposes, for hen coops, etc.

Netherlands (neth'ér-lands), THE, or HOLLAND, in Dutch NEDERLAND, or KONINKRIJK DER NEDERLANDEN, a kingdom of Europe which lies on the North Sea, N. of Belgium and W. of part of Northern Germany. Its area is 12,648 square miles; its population is 5,898,429. The country is divided into eleven provinces: North Brabant, Gelderland, South Holland, North Holland, Zeeland, Utrecht, Friesland, Overijssel, Groningen, Drenthe and Limburg. The king is also sovereign (grand-duke) of the Grand-duchy of Luxemburg. In addition to her European territories Holland possesses extensive colonies and dependencies in the Asiatic archipelago and America; including Java, Sumatra, great part of Borneo, Celebes, part of New Guinea, Surinam or Dutch Guiana, the West Indian islands of Curaçao, Saba, St. Eustatius, etc. Estimated colonial pop. 41,347,182.

General Features.—The Netherlands (or Low Countries, as the name implies, formerly including Holland and Belgium) form the most characteristic portion of the great plain of northern and western Europe. It is the lowest part of this immense level, some portions of it being 16 to 20 feet below the surface of the sea, and nearly all parts too low for natural drainage. The coast line is very irregular, being marked by the great inlet of the Zuider Zee, as well as by various others, and fringed by numerous islands. In great part the coast is so low that were it not for massive sea-dykes large areas would be inundated and lost to the inhabitants. In the interior also dykes are a common feature, being built to protect portions of land from the lakes or rivers, or to enable swampy pieces of land to be reclaimed by draining, the water being commonly pumped up by wind-mills. These inclosed lands are called *polders*, and by the formation of the polders the available area of the country is being constantly increased, lakes and marshes being converted into fertile fields, and considerable areas being even rescued from the sea. One of these reclamations was the Lake of Haarlem, the drainage of which, yielding more than 40,000 acres of good land now inhabited by some 12,000 persons, begun in 1839, was finished in 1852. Almost the only heights are the sand hills, about 100 to 180 feet high, forming a broad sterile band along the coast of South and North Holland; and a chain of low hills, of similar origin perhaps, southeast of the Zuider Zee. In the same line with the sand hills, extending past the mouth of the Zuider Zee, runs a chain of islands, namely, Texel, Vlieland, Schelling, Ameland, etc., which seem to indicate the original line of the coast before the ocean broke in upon the low lands. The coast

of Friesland, opposite to these islands, depends for its security altogether on artificial embankments. The highest elevation, 656 feet, is in the extreme southeast. The general aspect of the country is flat, tame, and uninteresting, and about a fifth of the whole surface consists of marsh, sand, heath, or other unproductive land.

Rivers and Canals.—The chief rivers of the Netherlands are the Rhine, Maas (or Meuse), Scheldt and Ijssel. The Rhine is above half a mile wide where it enters the Netherlands; it soon divides, the south and principal arm taking the name of Waal and uniting with the Maas, while the north arm, communicating with the Ijssel, takes the name of Leck; a branch from it named the Kromme (crooked) Rhein, winds by Utrecht to the Zuider Zee, while another very diminished stream called the Old Rhine flows from Utrecht by Leyden to the sea at Katwijk. The Maas, entering the Dutch Netherlands from Belgium, receives the Roer; of the Scheldt only the mouths, the east and the west, or Old Scheldt, lie within the Dutch boundary. The Ijssel, flowing from Germany, enters the Zuider Zee. The navigable canals are collectively more important than the rivers, on which indeed they depend, but they are so numerous as to defy detailed description. The chief are the North Holland Canal, between Amsterdam and the Helder, length 46 miles; and the more important ship canal, 15 miles long, 26 feet deep and 197 wide, from the North Sea to Amsterdam, and connected by locks with the Zuider Zee. (See *Amsterdam.*) Lakes are also very numerous.

Climate, Agriculture, etc.—The climate of the Netherlands is humid, changeable and disagreeable. The mean temperature is not lower than in like latitudes in the British Islands, and the quantity of rain (26 inches) is somewhat less; but the winter is much more severe. As regards rural industries, gardening and agriculture have attained a high degree of perfection. Yet the latter holds a subordinate place in rural industry. Wheat, of excellent quality, is grown only in favored portions of the south provinces. Rye, oats and buckwheat with horse-beans, beet, madder and chicory are more common crops; and tobacco is cultivated in the provinces of Gelderland, South Holland and Utrecht; flax in North Brabant, South and North Holland, Friesland and Zeeland; and hemp, sugar-beet, oil-seeds and hops in various parts of the kingdom. Culinary vegetables are cultivated on a large scale, not merely for the sake of supplying the internal demand, but also for the exportation of the seeds, which for ı an important article of Dutch commerce. But it is in stock (cattle, horses, sheep, swine, goats), and dairy produce in particular, that the rural industry of th· Netherlands shows its strength.

Commerce, Manufactures, etc.—The commerce of the country was at one time the most important in the world, and is even yet of great importance and activity. The external commerce is chiefly carried on with Great Britain, Germany, Belgium, and the Dutch colonies in the East. The imports amount to about $1,000,000,000, the exports to $900,000,000. A considerable portion of the trade is transit, passing through Holland to Germany and other interior countries. The foreign trade centers chiefly in Amsterdam and Rotterdam. The industrial occupations are varied. Shipbuilding and subsidiary trades are among the chief. Of textile manufactures that of linen is the most important; but silks and velvets, as well as woolens and cottons, are produced in considerable quantity. Pigments, brandy, gin, paper, glass, earthenware, etc., are among the more important products. Large numbers of the seaboard population are employed in the deep-sea fisheries. The chief money unit is the florin or guilder=40 cents.

People, Institutions, etc.—The stock to which the people belong is the Teutonic, the great majority of the inhabitants being descendants of the old Batavians. They comprise over 70 per cent. of the population, and are chiefly settled in the provinces of North and South Holland, Zeeland, Utrecht and Gelderland. The Flemings of North Brabant and Limburg, and the Frisians, inhabiting Friesland, Groningen, Drenthe and Overijssel, form the other groups. The majority of the people belong to the Dutch Reformed Church (a Presbyterian body); the remainder being Roman Catholics, Old Catholics, Jews, etc. All religious bodies are on a perfect equality. The government is a constitutional monarchy, the executive being vested in the monarch, and the legislative authority in the States General, sitting in two chambers. The upper chamber, fifty in number, is elected by the provincial councils or assemblies of the eleven provinces; the lower chamber, 100 in number, is elected directly, the electors being all males of twenty-three years of age taxed at a certain figure. The members of the lower house are paid. Elementary schools are everywhere established, and are partly supported by the state, but education is not compulsory. Higher class

schools are in all the chief towns; while there are state universities, namely, at Leyden, Utrecht and Groningen, and the municipal university at Amsterdam. The commercial capital of the country is Amsterdam, but the seat of government and residence of the sovereign is The Hague.

Language and Literature.—The literary language of the Kingdom of the Netherlands is in English called *Dutch*, but by the people themselves is called *Hollandsch* or *Nederduitsch*, that is, Low Dutch. This name it receives in opposition to the *Hochdeutsch* or High Dutch, the literary language of modern Germany. Closely allied to the Dutch is the Flemish language (which see). Both languages belong to the Low German group of the Teutonic or Germanic branch of the Indo-European family of languages. The two languages, or rather dialects, are in fact in their early history identical. What may be strictly called Dutch literature, as distinguished from Flemish, dates from the latter quarter of the sixteenth century. The chief names of this period are those of Coornhert, Von Marnix, Spiegel and Visscher, who did much to polish and regulate the language, and to produce correct models both of prose and verse. Pieter Corneliszoon Hooft (1581-1647) brought the prose style to a high degree of excellence; and Joost van den Vondel (1587-1679), the greatest of Dutch dramatists, performed the same service for the language of poetry. Jacob Cats, familiarly known in Holland as 'Father Cats' (1577-1660), on the other hand, confined himself to the sphere of every-day life. He was distinctively the poet of the people, and his writings are still popular. Among other leading names in pure literature are those of Constantyn Huygens (1596-1686), a satirist, epigrammist and didactic poet; Jacob van Westerbaan (died 1670) and Jan van Hemskork (died 1656), both erotic poets; and Dirk Kamphuisen (died 1626), a celebrated hymn writer. Among dramatists were Brandt (died 1685), who was also an historian and epigrammatist; Oudaan (died 1692), a political writer and lyrist; and Antonides van der Goes (died 1684)), celebrated also as a lyrist. The principal writer of comedies was Bredero (1585-1618). Dutch poetry declined towards the end of the seventeenth century, partly through French influence, but a revival set in with Jacob Bellamy (1757-88). Willem Bilderdijk (1756-1831) shone in all departments of poetry. J. F. Helmers (1767-1813) won great applause by the descriptive poem *De Hollandsche Natie*. Hendrik Tollens (1780-1856) was as a lyrist the avowed favorite of his country, and his *Overwintering der Hollanders op Nova Zembla* is regarded as the best descriptive poem in the Dutch language. An important service was rendered to the literature of his country by Jacob van Lennep (1802-68), who, incited by the example of Scott and Byron, introduced romanticism, and successfully repressed French classicism by his masterly treatment of native tales and historical subjects in narrative poems. The novelists who rank next to Van Lennep are Oltmans, Mrs. Bosboom-Toussaint, and Douwes Dekker (Multatuli). The list of recent Dutch prose writers also includes Schimmel, N. Beets, W. A. van Rees, Weitzel, Lange, J. ten Brink, Opzoomer, Limburg-Brouwer, and the historians Fruin (called the Dutch Motley) and Hofdijk. Dutch names famous in classical learning include those of Erasmus, Lipsius, Grotius, Gronovius, etc.; in science, Huygens, Leeuwenhoek, etc.; in philosophy, Spinoza; and in medicine, Boerhaave.

History.—The southern portion of the Low Countries belonged at the beginning of the Christian era to Belgic Gaul. (See *Gaul.*) The northern portion, inhabited by the Batavians and Frisians (see those articles), formed part of Germany. The southern portion as far as the Rhine was held by Rome up to A.D. 400, after which it came under the rule of the Franks, as did also subsequently the rest of the country. In the eleventh century the territory comprised in the present kingdoms of Belgium and the Netherlands formed a number of counties, marquisates, and duchies corresponding more or less with the modern provinces. By the latter part of the fifteenth century all these had been acquired by the Duke of Burgundy, and passed to the house of Hapsburg on the marriage of the daughter of Charles the Bold of Burgundy to the son of the Emperor Frederick III. On the abdication of Charles V in 1556 they passed to his son Philip II of Spain. In consequence of religious persecution in 1576 Holland and Zeeland openly rebelled, and in 1579 the five northern provinces—Holland, Zeeland, Utrecht, Guelders and Friesland—concluded the celebrated Union of Utrecht, by which they declared themselves independent of Spain. They were joined in 1580 by Overijssel, and in 1594 by Groningen. After the assassination of William of Orange, July 10, 1584, Maurice became stadtholder (governor). His victories at Nieuport and in Brabant, the bold and victorious exploits of the Dutch admirals against the navy of Philip II, the wars of France and England against Spain, and the apathy of Philip II, caused

in 1609 the Peace of Antwerp. But Holland had yet to take part in the Thirty Years War before its independence, now recognized by all the powers except Spain, was fully secured by the Peace of Westphalia (1648). In the middle of the seventeenth century the United Netherlands were the first commercial state and the first maritime power in the world, and for a long time maintained the dominion of the sea. The southern provinces alternated between the rule of Spain and Austria till 1797, when they came under the power of the French republic. In 1806 Louis Napoleon became King of Holland, but abdicated in 1810. In 1814 all the provinces, both of Holland and Belgium, were united by the treaty of London to form the Kingdom of the Netherlands, and the Prince of Orange was placed upon the throne as William I, king of the Netherlands. The artificial union lasted till 1830, when the southern provinces broke away and formed the independent kingdom of Belgium. King William I attempted to reduce the revolted provinces by force; but the great powers intervened, and finally matters were adjusted between the two countries in 1839. (See *Belgium*.) In the following year William I abdicated in favor of his son, William II, a gallant soldier, who had distinguished himself at Quatre Bras and Waterloo. William III came to the throne in 1849, and gave his support to a revision of the constitution, providing a representative government for the country. During his long reign, which ended in 1890, there was bitter party strife centering around the extension of the franchise, the question of religious education in the schools, and heavy taxation resulting from war expenses. The Dutch colonial empire consists of two groups: the Dutch East Indies, comprising Java, part of Borneo, Timor, the Moluccas, Celebes, and the western half of New Guinea; and the West Indies, comprising Dutch Guiana and Curacao. The Dutch East India Company was organized in 1602, and it was in the service of this company that Henry (or Hendrick) Hudson sailed in the *Half-Moon* from Amsterdam in 1609, hoping to force a passage to the East Indies, and instead entered New York Bay and discovered the river that bears his name. A trading post was established at New Amsterdam, now New York, and the Dutch West India Company began to people the new colony, called New Netherland, which remained a Dutch possession till 1664, when King Charles II of England sent a force of soldiers, who vanquished the Dutch defenders, altered the name of the town at the mouth of the Hudson to New York, and ended the dream of a great Dutch colonial empire stretching from French America, then Canada, to Virginia.

The history of the Netherlands from the death of William III in 1890 till the opening of the European war in 1914 is that of steady progress in home affairs. William III was succeeded by his only surviving child, Wilhelmina, but, being a minor, did not assume the government till 1898, when she had reached the age of 18. There was some friction between Great Britain and the Netherlands during the Boer War (1899).

The position of the Netherlands during the European war was one of grave peril. Neutrality was proclaimed at the outbreak of hostilities in 1914, and the Dutch people endeavored to be fair to both belligerents. The sinking by German submarines of several boats belonging to Holland roused a strong feeling among the populace and in addition to making verbal protest on behalf of their seamen the people protested in manifesto against the occupation of Belgium by the Teutons. The government refused to be swayed to depart from their program of neutrality, and the year 1917 found the country ground between the two millstones of the Central Allies and the Entente Allies. Unwilling to let Holland be a channel of communication with Germany the Entente Allies practically established a blockade of the Dutch coast, and what few ships were permitted to go and come were the target for German undersea boats. When the United States engaged in the war an attempt was made to arrange for the supply of food to Holland under guarantees that none of it would go to Germany. The exchange of notes between the countries did not result in a settlement, and meanwhile a great fleet of Dutch merchant vessels was being held in American ports, the United States government refusing to supply bunker coal till negotiations were satisfactorily terminated. For many months the ships lay in the harbors unused, and at last, in March, 1918, President Wilson announced that all the Dutch tonnage in American and Allied ports would be taken over for the period of the war. 'Ample compensation,' said the President in his statement, 'will be paid to the Dutch owners of the ships which will be put into service, and suitable provision will be made to meet the possibility of ships being lost through enemy action.' This act added 1,000,000 tons of shipping to the Allied fleets, which had been badly crippled by the submarine warfare. A total of 77 ships, about 600,000 tons, represented the addition to the

American merchant marine. Holland was the good Samaritan of some 1,200,000 Belgians who had fled over the border from their invaded country. In addition to succoring these, and maintaining an army of 300,000 men to prevent violations of neutrality, Holland gave free use of its railroads for the transportation of the supplies of the Belgian Relief Commission of the United States.

Netherlands Schools of Painting, a general title under which are grouped the Dutch and Flemish schools. Hubert and Jan van Eyck founded the Flemish school about the year 1400. Other famous painters of the early school were Hans Memling, Quintin Mastys and Francis Floris (1520-70). In Peter Paul Rubens (1577-1646), the Flemish school reached its acme. His pupils, Van Dyck and Jordaens, were the equals of Rubens in coloring, but not in conception or spirituality. The founder of the Dutch school was Luke of Leyden (1494-1533). Landscapes and animals were the characteristic subjects of this school. The chief masters in portraiture were Rembrandt and Frans Hals. Painters of peasant scenes included Van Ostade, Terburg, Steen and Van der Meer. Among later Dutch artists are Alma Tadema and Josef Israels. See *Painting*.

Nethersole (ne'ther-sōl), OLGA, actress, born in Kensington, England, in 1870. She first appeared in *Harvest* in 1887. She subsequently became a favorite in England and Australia, and made several visits to the United States, the first in 1894, when she appeared in New York in *Camille*. In subsequent visits she appeared in the roles of *Denise*, *Juliet*, *Carmen*, etc.

Netley (net'li), a village of England, in Hampton, 6 miles S. E. of Southampton, on Southampton Water. The Royal Victoria Hospital here was erected in 1857 for the reception of invalids from the troops on foreign service, and from the troops quartered in the military district in the neighborhood. The accommodation is for 1000 patients, but it is capable of being increased. Candidates for medical appointments in the army attend the medical school attached to the hospital, and the female army nurses have also their headquarters here.

Netting (net'ing), a net of small ropes to be stretched along the upper part of a ship's quarter to contain hammocks. Netting also used to be extended along a ship's gunwale to prevent the enemy from boarding.

Nettle (net'l), a genus of plants (*Urtica*) belonging to the nat. order Urticaceæ, and consisting chiefly of neglected weeds, having opposite or alternate leaves, and inconspicuous flowers, which are disposed in axillary racemes. The species are mostly herbaceous, and are usually covered with extremely fine, sharp, tubular hairs, placed upon minute vesicles filled with an acrid and caustic fluid, which by pressure is injected into the wounds caused by the sharp-pointed hairs. Hence arises the well-known stinging sensation when these plants are incautiously handled. Nettles yield a tough fiber which may be used as a substitute for hemp. Nettle-porridge and nettle-broth are dishes made from young and tender nettles cut in March or April. Many species of nettles are known, some of which are common in the United States.

Nettle-rash, or URTICARIA (Latin, *urtica*, a nettle), a common disease of the skin, an eruption closely resembling nettle-stings both as to appearance and as to the sensations it originates. It consists of small wheals, either red or white, sometimes both, having the centers white and the margins red. The disease may be either acute or chronic. When it is acute generally more or less of fever accompanies it. In almost all cases it arises from a disordered condition of the digestive organs, produced either by indigestible food, or in some persons by particular kinds of food which others eat with complete impunity.

Nettle-tree (*Celtis*), nat. order Urticaceæ, a deciduous tree, with simple and generally serrated leaves, much resembling those of the common nettle, but not stinging. It has a sweet fleshy drupaceous fruit. The common or European nettle-tree (*C. australis*) grows to the height of 30 or 40 feet, and is frequently planted for ornament in the south of France and north of Italy. The wood is useful for various purposes. *C. occidentalis*, sometimes called the sugar-berry, is a much larger tree, often attaining a height of from 60 to 80 feet. It is a native of North America from Canada to Carolina. A variety, *C. crassifolia*, is often called hackberry. See *Hackberry*.

Neu-Brandenburg. See *Brandenburg (New)*.

Neuburg (noi'burk), a town of Bavaria, on the Danube, 45 miles N. N. W. of Munich. It is a place of great antiquity, and for three centuries (1505-1802) was the capital of the independent duchy of Pfalz-Neuburg. The old ducal residence contains an interesting collection of portraits and armor. Pop. (1905) 8582.

Neufahrwasser (noi'fär-vas-ér), a seaport forming a

sort of suburb of Dantzig, from which it is about 3½ miles distant. (See *Dantzig*.) Pop. 8512.

Neufchatel (neu-shä-tel), NEUCHÂTEL (in German *Neuenburg*), a Swiss canton, bounded by France, Vaud, the Lake of Neufchâtel, and Bern, with an area of 312 sq. miles. Neufchâtel was an independent principality as early as 1034. After various vicissitudes it came into the hands of the King of Prussia, as heir of the house of Orange. In 1814 it was received into the Swiss Confederacy, and was the only canton with a monarchical government, which it preserved till 1848. After threatened war in May, 1857, the King of Prussia renounced all his rights in Neufchâtel. Several ridges of the Jura run through the country. The Lake of Neufchâtel, 24 miles long by 8 broad, communicates through the Aar with the Rhine. Grazing and dairy-farming are extensively carried on in the canton; wine, fruits, hemp and flax are produced. The chief manufactures are lace, cotton, watches and clocks (specially at Chaux de Fonds and Locle). The religion is Protestant. The language is French, but German is also spoken. Pop. 125.804.—The capital, which has the same name, lies 24 miles west of Bern, on a steep slope above the northwestern shore of Lake Neufchâtel. It has a castle, formerly the residence of the princes of Neufchâtel and now occupied by the government offices; an old Gothic church of the twelfth century; a gymnasium or college, containing a valuable natural history collection founded by Professor Agassiz, a native of the town, etc. It has various manufactures and an extensive trade. Pop. (1910) 23,525.

Neuhaus (noi'hous), a town of Bohemia, 20 miles northeast of Budweis, on the Nezarka. It has a grand castle of the Czerny family. Pop. 9316.

Neuhäusel (noi'hoi-zl; also ERSEK-UJVAR), a town of Hungary, on the river Neutra. It was formerly strongly fortified, and played an important part in the Turkish wars, but its fortifications were demolished in 1724. It is now merely a market town. Pop. 18,385.

Neuilly (neu-yē), a town of France, practically a suburb of Paris, on the right bank of the Seine, here crossed by Perronet's magnificent bridge. Pop. (1911) 44,616.

Neumünster (noi'mün-stèr), a town of Prussia, province of Schleswig-Holstein, 17 miles s. s. w. of Kiel. It is the center of the railway system of Holstein, and the second industrial town in the province, with cloth factories, etc., and a brisk trade. Pop. 34,558.

Neunkirchen (noin'kirh-en), or OBER-NEUNKIRCHEN, a town of Prussia, in the district of Treves, on the Blies, 12 miles northwest of Saarbrücken. It lies in a great coal-basin, in which about 4,000,000 tons of coal are raised annually, and has a large iron foundry employing about 3000 hands. Pop. 32,358.—A town in Lower Austria, lying 10 miles southwest of Wiener Neustadt, and with textile and other industries. Pop. 10,831.

Neuralgia (nū-ral'ji-a), the name given to that species of morbid pains which occur only in the course of one or more distinct nerves, and by this locality are distinguished from other pains. In neuralgia of the fifth nerve the pain is in one half of the face, and if the central branch is affected the pain is confined to the upper jaw; neuralgia of the chief nerve of the thigh (*sciatic nerve*) extends along the buttocks and back of the thigh down to the knee, and is called *sciatica*. It also affects the front, back, and outside of the leg, and the whole foot except its inner border; while neuralgia of the intercostal nerves manifests itself in a belt or circle of pain around the breast. The presence of neuralgia almost invariably indicates a weak state of the general system. The most common and best ascertained of the neuralgias are those of the nerves of the skin (*dermalgia*); but nerve pains occur also in other parts, as in the joints, muscles, and in the bowels (*enteralgia*). Many of the internal parts may be the seat of similar local affections; such, for example, are nervous affections of the heart and respiratory organs, which, however, do not usually manifest themselves by acute pain, but by special symptoms. The primary causes of the injury to the nerve producing neuralgia may be very various. It may be inflammation of the nerve itself, a swelling in or upon it, irritation of it produced by an ulcer or suppuration or swelling of the adjacent parts, especially the cavities of the bones, etc. Thin blooded persons and those of weak nerves are most liable to be affected by neuralgia, which varies much both in degree and duration. It is often chronic, and often suddenly occurs during the progress of other acute diseases, as in typhus or intermitting fevers. The treatment also, of course, varies with the nature of the different cases, some admitting of easy cure by the administration of nourishing food, and by the use of iron and quinine, and other tonics, while for others the aid of surgery has to be called in.

Neurapophyses (nū-ra-pof'i-sēz), or NEURAL ARCHES, the name applied to the upper arches which spring from the body of the vertebra, and which by their union form the 'neural canal,' inclosing the spinal marrow.

Neurasthenia (nū-ras-thē'ni-ā), in medicine, a disease of the nervous system, otherwise known as nervous exhaustion. Neurasthenia may result from overwork or worry or from a severe shock. It is more common in women than in men, and the tendency is hereditary. The most marked symptom is increasing inability for any mental or physical exertion; others are gastric disorders, sleeplessness, etc. Treatment involves absolute rest, massage and overfeeding.

Neurin, NEURINE (nū'rin), the nitrogenized substance of nerve fiber and cells, consisting chiefly of albumen and a peculiar fatty matter, associated with phosphorus.

Neuritis (nū-rī'tis), inflammation of a nerve. Tenderness in the course of the nerve and pain occurring in paroxysms are among the symptoms. Paralysis may occur as a result, and in the case of a special nerve of sense loss of the particular sense.

Neuron (nū'ron), NEURONE, the unit of the nervous system, consisting of the nerve cell together with the nerve fiber and all the fibrils. It is estimated that there are over 3,000,000,000 neurons in an adult human being.

Neuroptera (nū-rop'tēr-a), an order of insects which undergo an incomplete metamorphosis, distinguished by the possession of four well-developed membranous wings, which are generally of equal or nearly equal size. The name Neuroptera ('nerve-winged') is applied to the group in allusion to the large size of the nervures or supporting 'ribs' of the wings, which are very conspicuous and give to the wings a reticulated or network-like appearance. The mouth is generally masticatory, the head large and distinctly separable from the thorax, the antennæ generally slender. The tarsi possess from two to five joints. In general the larvæ are aquatic, the pupa closely resembling the perfect insect. The chief families included in the order comprise the Libellulidæ or dragon flies; the caddis flies (Phryganeidæ); the may-fly family (Ephemeridæ); the Myrmeleontidæ, or 'ant-lions'; the Hemerobiidæ, or 'lace-winged flies'; and the Termitidæ, represented by the celebrated 'white-ants' or termites of tropical regions.

Neurosis (nū-rō'sis; Gr. neuron, a nerve), a name common to diseases of the nervous system unaccompanied by any discoverable alteration in structure, that is to say, *functional* diseases of the nervous system. Hysteria, catalepsy, melancholia, various forms of neuralgia and spasm, are called neuroses.

Neurotic (nū-rot'ik), a term introduced into medicine to indicate some relationship to the nervous system. Thus a neurotic disease is a nervous disease. So, medicines that affect the nervous system, as opium, strychnine, etc., are called *neurotics*.

Neusatz (noi'sätz) a town of Hungary, on the Danube, opposite Peterwardein. Pop. (1910) 33,089.

Neusiedler See (noi'zēd-lēr zā), or Lake Neusiedl, a lake in the extreme west of Hungary, 23 miles long and 5 broad. It is salt and shallow throughout.

Neusohl (noi'zōl), a town of Hungary, at the confluence of the Gran and the Bistritz, 79 miles north of Pesth. Pop. 9264.

Neuss (nois), a town in Rhenish Prussia, 21 miles northwest of Cologne, on the Erft, near its junction with the Rhine. The church of St. Quirinus (1209) is a fine Romanesque building. Neuss has various flourishing industries, including woolen and cotton machinery and metal goods, and an active trade especially in grain. Pop. 37,224.

Neustadt (noi'stät; 'new town'), the name of numerous places in Germany.—1. NEUSTADT-AN-DER-HARDT, a town in the Palatinate of Bavaria, 14 miles east of Spires, with manufactures of cloth, paper, etc. Pop. 18,576.—2. NEUSTADT, or PRUDNIK, a walled town in Prussian Silesia, 29 miles s. s. w. of Oppeln, with manufactures of damasks, table linen, etc. Pop. 20,187.—3. NEUSTADT-EBERSWALDE, now officially named Eberswalde, a town in Prussia, 28 miles northeast of Berlin. Pop. 21,614.

Neu-Stettin (noi-stet-tēn'), a town of Prussia, in the province of Pomerania, on a small lake, 90 miles northeast of Stettin. It was founded in 1312, and is built after the pattern of Stettin; has manufactures of machinery, etc. Pop. 10,785.

Neu-Strelitz (noi-strā'lits), the capital of the Grand-duchy of Mecklenburg-Strelitz, between Lakes Zierk and Glambeck, 57 miles north of Berlin. It is regularly built in the form of a star, the eight rays of which converge on a spacious market-place, and has a large and handsome ducal palace, partly in the Doric and partly

in the Italian styles, with a library of 80,000 volumes and some good collections. Pop. 11,656.

Neustria (nū'tri-a), in the geography of the middle ages, the western kingdom of the Franks, in the north of France, so called in opposition to *Austrasia* (Austria, Oestreich), the eastern kingdom of the same. The term is derived from the negative particle *ne* (not), and *Austria*. On the death of Clovis (511) his sons divided his territories into two parts, which received these names. Neustria lay between the Meuse, the Loire, and the ocean. See *France* (*History*).

Neuter (nū'tèr), in zoölogy, a term applied to indicate those insect forms—represented chiefly among the ants, bees and wasps—in which the characteristics of sex are either present in a rudimentary condition or may not be developed at all. Thus among the ants the community consists of males, females, and neuters, or 'workers' as they are also termed. These ant-neuters are simply (sexually) undeveloped females, and upon these forms the performance of all the laborious duties of the ant colony devolves. In the bees the neuters, or workers, are similarly sterile females. The differences between the fertile females and neuters—both of which are developed from fertilized ova—appear to be produced through differences in the food upon which the respective larvæ are fed, and through similar and surrounding circumstances which affect the nutritive development of the larvæ. Plenty of food is thus said to produce females, and a scantier or different dietary males or neuters. See *Parthenogenesis*, *Ant*, *Bee*, *Wasp*.

Neuter, in grammar. See *Gender* and *Verb*.

Neutitschein (noi'tit-shīn), a town of Austria, in Moravia, 26 miles east of Olmütz, on the river Titsch. It lies in a fertile valley peopled by German settlers, and has manufactures of woolen, hats, etc. Pop. 11,891.

Neutra (nū'tra), a town in Hungary, on the river of the same name, 70 miles northwest of Budapest. Part of the town, including the cathedral and bishop's palace, is picturesquely situated on a height surrounded with ramparts and bastions. Pop. 15,169.

Neutrality (nū-tral'i-ti; Latin, *neuter*, neither) means, in the law of nations, that state of a nation in which it does not take part, directly or indirectly, in a war between other nations. To maintain itself in this state a nation is often obliged to assume a threatening position to be able to repel, in case of necessity, every aggression on the part of either of the belligerents. Such neutrality is termed an *armed neutrality*. In maritime wars the treatment of effects of the enemy on board neutral vessels, or neutral effects on board a hostile vessel, gives rise to very important questions. In former times the principle was pretty generally admitted, that the ownership of the goods on board of the vessels was the only point to be considered, and not the property of the vessels themselves. The belligerents, therefore, seized merchandise belonging to the enemy on board of neutral vessels; but they restored neutral property seized under the enemy's flag. But the endless investigations which this system caused, since a consequence of it was the searching of neutral vessels, produced by degrees a new and totally contrary principle, that the flag protects the cargo. The plenipotentiaries of Great Britain, Austria, France, Prussia, Russia, Sardinia and Turkey, assembled at Paris in April, 1856, agreed that the neutral flag should cover an enemy's goods, with the exception of contraband of war; and that neutral goods, with the exception of contraband of war, are not liable to capture under the enemy's flag. In the arbitration (in 1872) at Geneva of the *Alabama* claims of the United States against Great Britain, three rules were agreed to by the parties, to the effect that a neutral government is bound to use due diligence to prevent the fitting out in, or departure from, any of its ports of a vessel which it has reasonable ground to believe is intended to carry on war with a power with which it is at peace; that it is bound not to permit a belligerent to make use of its ports as a basis of naval operations, or a source of recruitment of men or military supplies; that it is bound to exercise due diligence in its own ports or waters, and as to all persons within its jurisdiction, to prevent any violation of these duties and obligations. In the early years of the European war (*q. v.*) Germany contended that the United States should place an embargo on arms and munitions in order to observe 'the true spirit of neutrality.' To this contention Mr. Bryan, then Secretary of State, replied that to inhibit the trade of arms during the war would be 'a direct violation of the neutrality of the United States.'

Neutralization (nū-tral-i-zā'shun), in chemistry, the process by which an acid and an alkali are so combined as to disguise each other's properties or render them inert.

Neutral Salts (nū'tral), salts in which all the hydrogen atoms capable of replacement by acid or basic radicals have been so replaced.

Neutral Tint (nū'tral), a pigment used in water colors, of a dull grayish hue partaking of the character of none of the bright colors. It is prepared by mixing together blue, red and yellow in various proportions.

Neuwerk (noi'verk), a town, Rhenish Prussia; 14 miles west of Düsseldorf. It has textile manufactures. Pop. (1910) 12,850.

Neuwied (noi'vēt), a town of Rhenish Prussia, 8 miles below Coblentz, on the Rhine. It contains an historic castle surrounded with extensive gardens, and famous Moravian schools. Pop. (1910) 19,107.

Neva (nē'va), a river of Russia, which issues from Lake Ladoga, and after a westerly course of about 40 miles flows into the Gulf of Finland below Petrograd, by several mouths. It is generally frozen over from October to April. Its commercial importance is enhanced by canals, which connect it with remote parts of the empire.

Nevada (nē-vä'dà), one of the United States, bounded N. by Oregon and Idaho, E. by Utah and Arizona, S. W. and W. by California; area 110,690 sq. miles. Nearly the whole State belongs to the 'Great Basin,' the waters of which do not reach the sea, and which consists of a series of long narrow basins, separated from each other by steep and rugged mountains. These include the slopes of the Sierra Nevada on the west, and several other groups, such as the Humboldt River Mountains, Diamond Mountains, Shoshone Mountains, etc. There are several salt lakes, including Lakes Walker, Carson and Pyramid. The chief river, besides the Colorado, is the Humboldt River. The rivers lose themselves in the soil or enter the salt lakes. Much of the State is very arid, but it includes tracts such as the charming Carson Valley, rich both in vegetation and mineral wealth. The climate is healthy, but marked by great extremes. The principal industry of the State up to this time is mining. Silver is the chief mineral product, and the mines of the Comstock Lode have been among the richest in the world. Gold is also found, and copper, lead and zinc in small quantities. Solid masses of salt of great purity are abundantly found in many places. There are numerous mineral springs and also geysers. Only a comparatively small area is suitable for tillage, but it is believed that several millions of acres can be reclaimed by irrigation, and works for this purpose are being constructed. The soil, when reclaimed, is well adapted for forage crops, cereals, vegetables and deciduous fruits. Stock raising is extensively carried on throughout the State and there is much good pasturage. The Southern Pacific, the Western Pacific, and the San Pedro, Los Angeles and Salt Lake railways pass through the State. The capital is Carson City, but Reno is the largest town in the State. Pop. (1910) 81,875.

Nevada, a city of Missouri, the capital of Vernon Co., 90 miles S. W. of Sedalia, on the Missouri Pacific and the Missouri, Kansas & Texas Railroads. Its industries include lumber and flour mills, zinc smelters, iron and carriage works. Here is a State lunatic asylum and a convent school. Pop. 7176.

Nevada City, a town of California, in a hilly region, about 60 miles N. N. E. of Sacramento. Here are rich mines of gold and the town has mills and breweries and is largely interested in fruit culture. It is surrounded by grand mountain scenery and has a healthy climate, which makes it a frequented health resort. Pop. 2689.

Nevers (ne-vär), France, on the right bank of the Loire, at the confluence of the Nièvre, 158 miles S. S. E. Paris. It is the see of a bishop, and has a cathedral (in part dating from the eleventh century, restored 1883), a somewhat heavy building; the ducal palace, now used by the courts of justice; a hôtel de ville, etc. Nevers has important industrial establishments, including potteries and porcelain works, producing ware which has long been famed. The navy cannon foundry, the largest ordnance foundry in France, was in 1880 turned into a practical school for boiler making and engine fitting. Pop. 26,673.

Neviansk (ne-vi-ansk'), a town of Russia, in the government of Perm, about 60 miles northwest of Ekaterinburg. It is situated on the eastern slope of the Ural Mountains, in a district rich in iron and auriferous sand, and is the center of the important iron works in the populous valley of the Neva. Pop. 17,950.

Nevis (nev'is), a small island of the British West Indies, belonging to the Leeward group, and lying off the southwest extremity of St. Kitts, from which it is separated by a channel 2 miles broad. It is a beautiful spot, little more than a single mountain, which rises 2500 feet from the sea, about 24 miles in circumference; area, 24,640 acres. It is of

volcanic origin, is well watered and in general fertile, producing sugar, which, with molasses and rum, forms the sole export. The principal town is Charleston. Pop. 12,774.

New. For names beginning with this adjective not given here, see the articles under the name which follows it.

New Albany, a city of Indiana, capital of Floyd Co., on the Ohio River, nearly opposite Louisville, Ky., with which it is connected by bridges. It is the seat of DePauw (Women's) College, organized in 1850, and has a national cemetery. It has a large shipping and supply trade. Pop. 20,629.

New Amsterdam, Dutch colonial name for Manhattan Island, now borough of New York. The earliest Dutch settlers appeared about 1623. See *Dutch West Indies.*

Newark (nū'ärk), a city of Ohio, capital of Licking Co., on the Licking River, 33 miles E. by N. of Columbus, and on the Ohio Canal and several railroads. It is in a grain, wool and live-stock region, and has railroad and locomotive shops and extensive manufacturing industries, its products embracing engines and boilers, cars, glassware, agricultural implements, bentwood, foundry and machine shop products. In the vicinity are extensive and striking examples of the works of the mound builders. Pop. 25,404.

Newark, a city and port of New Jersey, the seat of Essex Co., 9 miles west of New York City, finely situated on the west side of Passaic River, about 4 miles from its mouth in Newark Bay. It is the largest city in the State, and is regularly laid out with wide straight streets, generally intersecting at right angles. Broad Street, the principal thoroughfare, is more than 120 feet broad, shaded with elms, and divides the city into two nearly equal parts. It contains few notable public buildings, but several of its business establishments are housed in imposing buildings, and it has some handsome churches and a number of educational institutions. Here is the New Jersey Historical Society. Newark is distinguished as a manufacturing town, the works including a very large cotton-thread factory, a sewing machine factory, and manufactures of furniture, machinery and castings, leather, boots and shoes, saddlery, oilcloth, hardware, clothing, india-rubber goods, a large number of extensive breweries, etc. There is a considerable coasting trade and constant steamboat communication with New York, while there is a network of steam and electric railways connecting with neighboring and distant towns. An extensive system of public parks has been inaugurated. Pop. 347,469.

Newark, a village in Wayne Co., New York, 30 miles S. E. of Rochester. It has railroad shops, canneries and extensive nurseries, and manufactures of tin, gloves, paper-boxes, etc. Pop. 6227.

Newark-upon-Trent, a municipal borough of England, in Nottinghamshire, on a branch of the Trent, 17 miles northeast of Nottingham. The corn market is one of the largest in the kingdom. Iron founding, brass founding, brewing, and the manufacture of boilers and agricultural implements are carried on. Newark returned two members to Parliament until 1885; it now gives name to a parliamentary division. Pop. 16,412.

New Bedford (bed'ferd), a city and port of Massachusetts, 55 miles south from Boston, on the estuary of the Acushnet, which opens into Buzzard's Bay. It is connected by bridges with Fairhaven, and is noted for the elegance of its private residences and its handsome public buildings. Its public library is one of the oldest institutions of the kind in this country. Until the middle of the nineteenth century it was largely engaged in the whale fishery. It is now an active manufacturing city, some of its cotton and yarn mills being among the largest in the world. It ranks first in this country in the production of fine cotton goods. It has also iron and copper, oil and candle works, boot and shoe factories, and many other industries. Pop. 96,652.

Newbern (nu'bèrn), a city of North Carolina, the capital of Craven County, the port of entry for Pamlico district, on the estuary of the Neuse, which opens into Pamlico Sound. A large traffic in early vegetables for the northern markets is carried on. It also ships large quantities of cotton, lumber, and naval stores and has important fisheries. It was founded by Swiss settlers in 1710 and was formerly the capital of the state. Pop. 9961.

Newberry, a town, capital of Newberry County, South Carolina, 47 miles W. N. W. of Columbia. It has manufactures of cotton, cottonseed oil, fertilizers, etc., and is an important market for cotton. Pop. 5028.

New Brighton (bri'tun), a rising watering place in Cheshire, England, 4 miles north of Birkenhead. It has excellent bathing. Pop. 5000.

New Brighton, a borough of Beaver County, Pennsylvania, on Beaver River, near its entrance into the Ohio, and 28 miles N. W. of Pittsburgh. The river affords abundant water power, and there is a supply of natural gas. The manufactures include sanitary wares, porcelain, pottery, etc. Pop. 8329.

New Brighton, a former city of New York, on the N. E. shore of Staten Island, 6 miles S. W. of Manhattan Island. It now forms part of the borough of Richmond, New York city, and contains many handsome residences of New York business men. Here is the Sailors' Snug Harbor, for aged and disabled seamen, and an institution for destitute children of seamen.

New Britain (brit'n), the largest of a group of islands occupied by Germany, situated in what is now called the Bismarck Archipelago, east of New Guinea in the Pacific Ocean.

New Britain, a city of Hartford County Connecticut, 10 miles S. W. of Hartford. Its manufactures are extensive, including hardware, cutlery, hosiery, cold rolled steel, registers, shirts, etc. Here are the State Normal and State Trade Schools. New Britain was originally a part of Berlin; but was incorporated in 1850. Pop. 56,000.

New Brunswick (bruns'wik), a province of the Dominion of Canada, on the east coast of North America; bounded west by the State of Maine; northwest by the province of Quebec; north by Chaleur Bay; east by the Gulf of St. Lawrence and Northumberland Strait, the latter separating it from Prince Edward Island; and south by the Bay of Fundy and part of Nova Scotia; area, 27,322 square miles, or about the same as the mainland of Scotland. Its coast line is interrupted only at the point of junction with Nova Scotia, where an isthmus of not more than 14 miles in breadth connects the two territories, and separates Northumberland Strait from the Bay of Fundy, which it is proposed to unite by means of a canal. The general surface of the country is level, but hilly in the northwest. The principal rivers are the St. John, 450 miles in length, and navigable for vessels of 100 tons to Fredericton, 80 miles from its entrance into the Bay of Fundy; and the Miramichi, 225 miles in length, which falls into the bay of the same name, and is navigable for large vessels 25 miles from the gulf. There are a number of lakes, the largest, Grand Lake, being 25 miles long by about 5 miles broad. Coal is plentiful, and iron ore abundant; the former is found over 10,000 square miles, or more than one-third of the whole area. Copper, manganese, gypsum, limestone and freestone abound. The climate, like that of other portions of Canada, is subject to extremes of heat and cold, but is, on the whole, healthy. After agriculture, lumbering and fishing are the main occupations of the inhabitants, though many are engaged in mining and manufacturing. A very large portion of the soil is well adapted for agriculture, but only about one-tenth of the land suitable for agriculture has yet been taken up. Great attention has of late years been paid to the improvement of live stock. New Brunswick is very largely wooded, and the forests supply three-fourths of the total exports. The fisheries are of great value. The minerals exported include coal, gypsum, antimony ore, copper ore, manganese, plumbago and unwrought stone. Owing to its cheap coal and proximity to the markets of the United States and Europe, New Brunswick may develop as an important manufacturing country. Discovered by Sebastian Cabot in 1498, it formed, with Nova Scotia, the French colony of Acadia (1604-1713), was erected into a separate province in 1784, and in 1867 became a province of the Dominion of Canada. The capital is Fredericton, but the chief commercial center is St. John, which has one of the finest harbors on the North Atlantic. Pop. 351,889.

New Brunswick, a city of New Jersey, seat of Raritan County, on the Raritan River, which here becomes navigable, 31 miles southwest of New York, and on the Delaware and Raritan Canal. It is the seat of Rutgers College, which was organized in 1766, with which is connected a state agricultural and mechanical college and a theological seminary of the Dutch Reformed Church; also of the Sage Library. Here are the largest laboratories in the United States, also extensive manufactures of india-rubber goods, plaster, paper-hangings, hosiery, refrigerators, automobiles, rubber boots and shoes, etc. Pop. 28,300.

Newburgh, a city of Orange County, New York, on the W. bank of the Hudson River, 57 miles N. of New York city, with good railroad and steamer service. It is built on high ground commanding a fine view of the river and the Highlands. It has a large river trade in dairy and farm products, manufactures of cotton goods, woolen

goods, hats, carpets, boilers, steel boats, etc. It has several academic institutions. It was the headquarters of Washington during the Revolutionary war, and here the American army was disbanded in 1783. Pop. 30,000.

Newburgh (nū'burg), a village of Cuyahoga County, Ohio, 6 miles S. E. of Cleveland, of which city it now forms a part. It has important iron and steel industries. Pop. 5813.

Newbury (nū'ber-i), a municipal borough in Berkshire, England, 52 miles west of London, on the Kennett, which is made navigable to Reading, and joins the Thames. There are malting establishments and corn mills, and a considerable traffic is carried on by the Kennet and Avon Canal. In 1643 and 1644 battles were fought in the vicinity between the Royalists and the Parliamentarians, both resulting in victory for the Royalists. Pop. 12,108.

Newburyport (nū'be-ri-port), a city and port of Massachusetts, one of the capitals of Essex County, at the mouth of the Merrimac, and 35 miles N. N. E. *of* Boston. It contains a city hall, a marine museum, homes for aged men and women and destitute children, the Putnam Free School, etc. It has cotton, cloth and yarn mills, large saw and planing mills, and extensive manufactures of machinery, boots and shoes, combs, celluloid goods, cordage, silverware, etc. Pop. 14,949.

New Caledonia (kal-e-dō'ni-a), an island in the Pacific, situated about 800 miles east of Australia. It was discovered by Captain Cook in 1774, and appropriated by the French as a convict settlement in 1854. The capital is Noumea, near the south end of the island, with a fine harbor. The island is mountainous, well watered and wooded, and yields all sorts of Polynesian produce. The climate is hot but healthy. There are nickel mines, and also mines of copper and cobalt, considerable quantities of which are raised and exported, as also chrome, copra, coffee, etc. With the adjacent Loyalty Islands the area is estimated at 6724 square miles, and the population at 51,415. Including settlers and miners, officials and troops, and convicts and their families, the white population numbers about 22,000. The native population, of Melanasian race, and cannibals in habit, have diminished greatly since the French occupation. The attempt of the French to work the settlement both as a free and as a penal colony has not hitherto answered well; and the frequent escape of convicts to Australia has been a continual source of local trouble and international dispute.

Newcastle (nū'kas-l), the principal shipping port of New South Wales after Sydney, situated at the mouth of the Hunter River, upon ground rising somewhat steeply from the sea. It is a well laid out, well built, and progressive town. Pop. (1911) 57,650.

New Castle, a city, county seat of Lawrence County, Pennsylvania, 50 miles N. W. of Pittsburgh, with six streams suitable for manufacturing purposes, and served by six railroads; an industrial and freight-distributing center, with extensive manufacturing interests. Its products include cars, tin plate, dynamite, paper, flour, etc. It has also large rolling mills, iron foundries and furnaces. Pop. 36,280.

New Castle, a city and port of delivery of New Castle County, Delaware, on the Delaware River, 6 miles below Wilmington. It has fishing and manufacturing interests. It was settled by the Swedes, who were driven out by the Dutch, who in turn were superseded by the English. Pop. 3351.

New Castle, a city, county seat of Henry County, Indiana, on the Blue River, 45 miles east of Indianapolis. Its industries include automobile, piano and furniture factories; rolling mills, rose culture, etc. Pop. 9446.

Newcastle-under-Lyme, a municipal and parliamentary borough of England, Staffordshire, close to the Potteries, and 10 miles N. N. W. of the town of Stafford. Coal and iron works are carried on in the neighborhood, giving employment to a large number of the inhabitants, most of whom, however, find work in the Potteries. In the town itself a few industries are carried on, such as brewing, malting, tanning and paper making. By canal it is connected with the Trent, Mersey, Severn and Thames. Pop. (1911) 20,204.

Newcastle-upon-Tyne, a municipal and parliamentary borough, river port, and episcopal city in the county of Northumberland, England, but forming a county in itself. It stands on the north bank of the Tyne, about 9 miles from its mouth, and 276 miles by railway from London. Among the public buildings are the Cathedral of St. Nicholas, an ancient Gothic structure; the Roman Catholic Church and Cathedral of St. Mary, a modern building in the early English style; the town hall, a handsome modern edifice; the Moot Hall, in which the assizes for the county are held; the castle,

one of the finest specimens of castellated Norman in England, recently restored; the Central Railway station, an imposing building; the public library (opened 1882); and the General Market. Among the educational institutions the chief are the College of Medicine and Surgery; and the College of Physical Science, in connection with Durham University. Newcastle, owing to the rich mineral products of the neighborhood, has attained a first position among the great centers of British enterprise. Some of the more important of its industries are ship building, and the manufacture of locomotive and marine engines, cannon, shot, tools, firebricks, [illegible] and wire ropes, cables, anchors, [illegible]. Situated in the midst of one of the largest coal fields in England, [illegible] enormous quantities of coal. Newcastle is one of the Tyne ports (which include also North and South Shields). During the past few years vast improvements have been made on the river, and all the way between Shields and Newcastle there is now a depth of 20 feet at low water. (See *Tyne.*) Newcastle is situated at the eastern termination of the wall of Hadrian, and Roman antiquities have been repeatedly discovered in it. The castle or fortress was built by Robert, son of William the Conqueror, about 1080, about which time it received its present name. Newcastle was a frequent object of attack in the wars between England and Scotland. It was taken possession of by the Scottish Covenanting army in 1640 and in 1644, and in 1647 Charles I was delivered here by the Scottish army to the parliamentary commissioners. Pop. (1911) 266,671.

Newchwang (nū-chwäng'), a city of China, in Manchuria, on the Liao River, about 35 miles from its mouth. It is practically an inland city, but was chosen as one of the ports to be opened to foreign commerce by the Treaty of Tien-tsin. It is the chief port of Manchuria and has an immense commerce, exporting grain, beans, ginseng, deer horns, liquorice and provisions. The foreign settlements and the trade, however, are necessarily at Ying-tze, near the river's mouth. Pop. estimated at 40,000 to 60,000.

Newcomb (nū'kom), SIMON, astronomer, born at Wallace, Nova Scotia, in 1835; died in 1909. He came to the United States in 1853, was graduated at the Lawrence Scientific School in 1858, and in 1861 was made Professor of Mathematics in the United States navy, being assigned to the Naval Observatory at Washington. While there he negotiated for the 26-inch telescope authorized by Congress and superintended its construction. He was appointed to observe the transit of Venus in 1874, was made superintendent of the *Nautical Almanac* in 1877, and became professor of mathematics and astronomy at Johns Hopkins University in 1884. His later years were spent in independent research. He made important discoveries in astronomy and wrote *Popular Astronomy*, *A Course of Mathematics*, *Principles of Political Economy*, etc.

Newcomen (nū-kom'en), THOMAS, a locksmith at Dartmouth, in Devonshire, towards the close of the seventeenth century, and one of the inventors of the steam engine. Newcomen conceived the idea of producing a vacuum below the piston of a steam engine after it had been raised by the expansive force of the steam, which he effected by the injection of cold water to condense the vapor. The merit of first applying the steam engine to practical purposes is thus due to Newcomen, who, in conjunction with Captain Savery and John Cowley, took out a patent for the invention in 1705. See *Steam Engine.*

New Decatur, a city of Morgan County, Alabama, one mile s. of Decatur. It has cotton compresses, oil mills, spoke and handle factories, etc. Pop. 6118.

Newel (nū'el), the central space or column round which the steps of a circular staircase are wound. When there is no central pillar the newel is said to be open.

Newell, ROBERT HENRY, humorist, born at New York in 1836; died in 1901. He became a journalist and editor in New York and was widely known for his humorous and satiric '*Orpheus C. Kerr*' papers (5 vols. of letters on Civil war topics). He also wrote novels, poems, etc.

New England (ing'gland), the northeast portion of the United States, comprising the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Originally called North Virginia when granted by James I to the Plymouth Company in 1606, it received the name of New England from Captain John Smith, who explored and made a map of the coast in 1614.

New Forest (for'est), a large tract in England, in the southwest of Hampshire, forming one of the royal forests, about 60 miles in circuit, which is commonly said to have been laid waste and turned into a forest

by William the Conqueror. It contains within its limits portions of cultivated land belonging to private persons. The public portions are partly inclosed, partly uninclosed, and present much fine sylvan scenery. There are several villages within the forest area, Lyndhurst being the forest capital. Oak and beech are the principal trees.

Newfoundland (nū'fund-land), a large island of British North America, in the Atlantic Ocean, at the mouth of the Gulf of St. Lawrence, and nearer to Europe than any other part of America—the distance from the port of St. John's to the harbor of Valentia, in Ireland, being only about 1918 miles. Area, excluding the territory of Labrador on the mainland, which belongs to this colony, 40,000 square miles (or nearly 10,000 more than Ireland). It is of extremely irregular form, with a coast line, particularly on the southeast and south, broken up in a remarkable manner by broad and deep bays, harbors, coves, inlets and lagoons.

The interior is much intersected by rivers and lakes, exhibits many barren tracts, and is but thinly wooded except on the banks of the rivers; nevertheless there is much more land suited for settlement than was once supposed, and the forests as a whole are valuable. The largest rivers are Humber River and the river Exploits; the largest lakes Grand Pond and Indian Lake. The minerals comprise coal, gypsum, copper, lead, nickel, silver, iron and gold. Copper exists in large quantities, and is worked to a greater extent every year. The winter is long, severe and damp, and the summer is dry, short and hot; but the climate, though severe, is healthful, the mortality among the inhabitants being lower than in most parts of the American continent. The principal trees are pine, spruce, birch, willow and mountain-ash. The crops generally are abundant, particularly potatoes. Grain crops also thrive well in parts, wheat having been known to yield 50 bushels per acre; but both climate and soil are more favorable to pasturage and green crops than to grain. Dairy farming is being introduced, and agriculture is sure to receive more attention in the future. In the valleys on the western coast are large tracts, now almost wholly unoccupied, capable of being converted into fairly productive grazing land, but waiting for the construction of railways. The southeastern portion is the most thickly settled. The wild animals are the caribou or reindeer, bear, wolf, hare, beaver, marten, wild cat, etc.

The famous banks of Newfoundland around the coasts swarm with almost every variety of fish, particularly cod. The cod fishery is prosecuted from June to November, and may be said, with the other fisheries, of seal, lobster, herring and salmon, to form the staple occupation of the inhabitants. Cod fish is far the largest export. The trade is chiefly with Britain, Canada and the United States. The original Atlantic cable lands in Heart's Content Harbor. Newfoundland was discovered by John Cabot in 1497, and the first English colony was planted in 1621. A struggle for supremacy took place between the English and the French; but in 1713 Newfoundland and its dependencies were declared, by the Treaty of Utrecht, to belong wholly to Great Britain, the French reserving a right to fish and cure on certain parts of the coast. Responsible government was granted in 1833. The colony, as yet, declines to join the Canadian Confederation. The only noteworthy town on the island is St. John's, the capital. Pop. 217,037.

Newfoundland Dog, supposed to have come originally from Newfoundland, where it is employed by the natives as a beast of burden. It is the largest, the most courageous, and by far the most intelligent of the water-dogs.

Newgate (nū'gāt), a historical jail of the city of London, at the west end of Newgate street, mentioned early in the thirteenth century. It was destroyed in the great fire of 1666, but rebuilt in 1770. After 1877 Newgate ceased to be used as a prison, and it was demolished in 1904.

New Glasgow, a town of Picton Co., Nova Scotia, Canada, on the East R., near its entrance. It has extensive ship-building yards, and a large shipping trade. The main products are wire, nails, steel, leather, pottery, glass, etc. Pop. (1911) 6383.

New Guinea (gin'ē), or PAPUA, a large island in Australasia, next to Australia, of which it lies north, the largest on the globe; area, 305,900 square miles; length about 1500; breadth from 200 to 400 miles. It is separated from Australia on the south by Torres Strait, and from the Moluccas on the west by Gilolo Passage. The coasts are for the most part lofty, with mountains coming close to the sea, but in the neighborhood of Torres Strait the shore presents the appearance of a marshy flat covered with dense forests. In the interior there are still loftier mountains, covered with perpetual snow, and volcanoes. In the southeast and

Mount Owen Stanley rises to the height of 13,205 feet; farther west and near the north coast Mount Schopenhauer reaches 20,000 feet. The island is rich in tropical products, possesses a copious and peculiar flora and fauna (birds of paradise being especially numerous and gorgeous), and is suitable for tropical agriculture. The coast is miasmatic in many places; the mountainous interior is reported healthier. On the west coast are numerous Malay settlements, but the

Natives of New Guinea.

bulk of the inhabitants are Papuans, a race resembling the negroes of Guinea. Some are disposed to be friendly, others are fierce and intractable. The discovery of New Guinea was made by the Portuguese early in the sixteenth century, but little was known of it till recently. The naturalists were the first to make incursions into its interior, and among these Mr. A. R. Wallace, who visited it in 1858, was the pioneer. The missionaries came next, and mission stations have been formed by Germans on the northeast coast, and by the London Missionary Society at various points on the southeast coast. Germany and the Australian colonies also began to take an interest in New Guinea and the latter urged the home government to annex the eastern part of the island, the western portion having long been recognized as Dutch. At length the delimitation and division of the island between Great Britain, Germany and Holland was settled in 1885. That part of the island lying west of the 141st meridian is assigned to Holland, and comprises 150,755 square miles; the northern part of the remainder of the island is assigned to Germany, and the southern to Great Britain. The German territory, called Kaiser Wilhelm's Land, contains 68,785 sq. miles; the English territory 86,457 square miles. The islands of Torres Strait, which are the seat of a valuable pearl shell and trepang fishery, and which practically command the strait, have all been annexed to Queensland. A German chartered company whose object is to develop the resources of the country has stations in German New Guinea. The Dutch have done little or nothing for their portion of the island. Pop. estimated at about 200,000.

New Hampshire, one of the United States, bounded on the north by Canada, east by Maine, southeast by the Atlantic, south by Massachusetts, and west by Vermont, from which it is separated by the Connecticut River; area 9341 square miles. This State has a sea coast of only 18 miles. For the distance of 20 or 30 miles from the sea the land is almost level, but thereafter rises, and in its northern part is traversed southwest to northeast by a continuation of the Alleghenies, culminating in Mount Washington, 6293 feet high. There are a number of fine lakes and both lake and mountain scenery is beautiful. The chief mineral resources are granite and mica, though the entire mineral output is small. The principal crops are wheat, Indian corn, oats and barley; buckwheat, hay, hops tobacco, potatoes, flax, beans and peas are also raised. Hay is far the most valuable product of the farms, and is increasing in value while the farm crops are decreasing. Apple and pear trees are abundant in the cultivated districts; and the hilly and mountainous regions are still covered with extensive forests of pine, oak, beech, birch, sugar-maple, etc. Manufactures are actively carried on, the principal being cotton, woolen and worsted goods, boots and shoes, leather, lumber, iron, machinery, furniture, etc. The mileage of railways is greater in proportion to population and wealth than in any other New England State. Education is well attended to, and there is a university, Dartmouth College, at Hanover. New Hampshire was first settled in 1623 at Dover and Portsmouth. The capital is Concord, the largest city and the chief manufacturing center is Manchester, and the only port is Portsmouth, where there is a navy-yard. Pop. (1910) 430,572.

New Haven (hā'vn), a seaport town of Connecticut, capital of New Haven County, on a bay of the same name in Long Island Sound, 72 miles northeast of New York. There are important manufactures of carriages, arms, wire, rubber goods, edge tools, clocks, musical instruments, pulp, paper, etc., and there is a large foreign trade, particularly with the West Indies. New Haven is widely known as the seat of Yale College (which see). Other educational institu-

tions are the Hopkins Grammar School, Boardman Manual Training School, and a State normal school, etc.; there are also several learned societies, including an Academy of Science and a historical society. Pop. 133,605.

New Hebrides (heb-ri-dēz), a long chain of volcanic islands in the Pacific, lying northwest of Fiji and northeast of New Caledonia, and embracing an area of about 3000 square miles. They are extremely fertile, producing cocoanuts, sandal wood, fruits, and all manner of Polynesian produce; but the climate is rather unfavorable to Europeans. The natives are of Melanasian race. The New Hebrides have for some time been more or less a source of international difficulty between Britain and France. An agreement was at length come to that neither power should annex the group; but in 1886, apparently in violation of this agreement, French troops were landed on various pretexts, and military stations formed at various points. They eventually evacuated the islands, and a dual protectorate has been formed.

New Holland. See *Australia.*

New Iberia (I-bē'ri-a), a town of Louisiana, capital of Iberia parish, about 100 miles W. of New Orleans. It is on the navigable Bayou Lake and ships cotton, corn, rice and sugar. There are also shipyards, knitting and other mills, and various other industries. Pop. 7499.

New Ireland (ir'land) the name of the largest of a group of islands situated east of New Guinea, in the Bismarck Archipelago, in the Pacific Ocean. The inhabitants are cannibal Papuans; the islands are volcanic, and the soil good. Called by the Germans *Neu-Mecklenburg.*

New Jersey (jer'zi), one of the eastern United States, bounded on the north by New York, east by the Atlantic Ocean and the Hudson River, south by Delaware Bay, and west by the States of Delaware and Pennsylvania, from which it is separated by the Delaware River; area, 8224 square miles. The bays of Newark, Raritan and Delaware form excellent harbors. The northwest part of the State is mountainous, being crossed by two ranges of the Appalachian chain. The middle portion of the State is agreeably diversified by hills and valleys; the southern part is level and sandy, and to a great extent barren, yielding naturally little else than scrub-oaks and yellow pine. The other portions of the state have a good soil, and produce Indian corn and other cereals, buckwheat, potatoes, etc. The fruits are good, especially apples, pears, cherries, plums and peaches. The central part of the State is the most thickly settled and is, in fact, a vast market garden for the supply of New York and Philadelphia. Large quantities of grapes and small fruits, including cranberries, are grown in the south. There are large marl deposits, from which the poor soil of the south has been largely fertilized. The climate is mild, and nowhere is the cold severely felt in winter except in the mountainous regions of the north, where the finest cattle are reared, and large quantities of butter and cheese made. The chief minerals are magnetite and brown ores and zinc; and the production of cement and clay products is important. New Jersey ranks high among the States in the fisheries industry and in manufacturing industries, including smelting and refining copper, silk goods, foundry and machine shops, slaughtering and packing, wool goods, wire, leather, electrical machinery, tobacco manufactures and chemicals. Glass is largely produced in the southern portion, where the necessary grade of sand abounds. The principal seat of education is the Princeton University, Princeton, one of the principal colleges in the United States. Other important institutions are Rutgers College, New Brunswick, Stevens Institute of Technology, Hoboken, and the State normal school at Trenton. The principal towns are Trenton, the capital; Jersey City, Newark, New Brunswick, Paterson and Burlington. New Jersey was settled by the Dutch, 1614-20. Pop. (1910) 2,537,167.

New Jerusalem Church. See *Swedenborgians.*

New Kensington, a borough in Westmoreland County, Pennsylvania, 18 miles N. E. of Pittsburgh. It has manufactories of aluminum, car-springs, tin-plate, white-lead, glass, etc. Pop. 8273.

New Leon, or NUEVO LEON, a Mexican state, bounded by Cohahuila, Zacatecas, San Luis Potosi, and Tamaulipas; area, 23,637 square miles. It is mountainous but fertile, and lead, gold, silver and salt are worked; chief town, Monterey. Pop. 270,852.

New London (lun'dun), a city of Connecticut, on the Thames, 3 miles from its entrance into Long Island Sound, 50 miles E. of New Haven; served by the New York, New Haven and Hartford and other railroads. There are important manufacturing industries, including silks, comfortables, cotton gins, printing presses, brass

and copper tubing, oil and gasoline engines, etc. The harbor is one of the best in the United States, and is improved by the State-owned docks. Here is located the Connecticut College for Women and the United States Revenue Cutter Service School of Instruction. The city was settled in 1646, and was burned at the hands of Benedict Arnold and the British in 1781. Pop. 19,659.

Newman (nū'man), FRANCIS WILLIAM, younger brother of Cardinal Newman; was born in London, in 1805, and was educated at Ealing and at Worcester College, Oxford, graduating double first (1826). He was fellow of Balliol 1826-30, when he resigned, having conscientious scruples about signing the *Thirty-nine Articles*. He was appointed classical tutor at Bristol College (1834), professor of classics at Manchester New College (1840), and professor of Latin at University College, London, 1846-63, and from that time he devoted himself exclusively to literature. His writings exhibit great scholarship and versatility. Among them are *The Soul, Its Sorrows and Aspirations* (1849); *Phases of Faith* (1850), and *Theism* (1858). Like his brother, Cardinal Newman, he diverged widely from Anglican orthodoxy, but in precisely the opposite direction. He died in 1897.

Newman, JOHN HENRY, CARDINAL, born at London in 1801, and educated at Ealing and Trinity College, Oxford, where he was graduated with classical honors (1820), and was elected fellow of Oriel College. He was vice-principal of St. Alban's Hall (1825-26) under Dr. (afterwards Archbishop) Whately, and was incumbent of St. Mary's, Oxford, and chaplain of Littlemore (1828-43). During this last period he took part with Keble and Pusey in originating the Oxford movement; was a leader in the propaganda of High Church doctrines, and contributed largely to the celebrated *Tracts for the Times*. The last of these, on the elasticity of the *Thirty-nine Articles*, was censured by the University authorities, and was followed by Newman's resignation of his livings (1843), and secession to the Church of Rome (1845). Ordained a priest of that church, he was successively head of the Oratory of St. Philip Neri at Birmingham, rector of the Roman Catholic University of Dublin (1854-58), and principal of the Roman Catholic School at Edgbaston. In 1879 he was created a cardinal. He produced some remarkable works sustaining the doctrines of the Church of Rome, particularly the *Apologia pro Vitâ suâ* (1864), and the *Reply to Mr. Gladstone* (1875) on the Vatican decrees. He died in 1890.

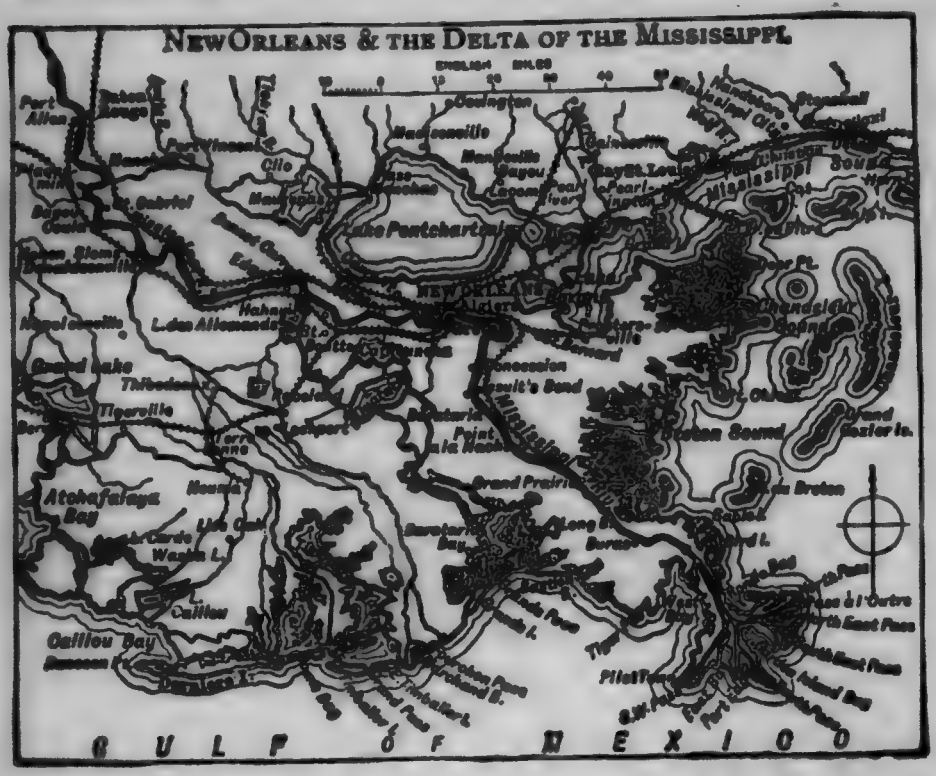
Newmarket (nū'-mar-ket), a town of England, partly in Cambridgeshire and partly in Suffolk, 13 miles E. N. E. of Cambridge; the chief seat of the Jockey Club, famed for its racecourse, races, and horse-training establishments. The chief races are the Two Thousand, run in April, and the Cesarewitch, run in October. Pop. 10,483.

New Mexico (nū-meks'i-kō), one of the United States, bounded on the north by Colorado, east by Texas, south by Texas and Mexico, and west by Arizona; area, 122,634 square miles. The surface is generally mountainous, being traversed from north to south by the Rocky Mountains. A central valley extends across the whole territory from north to south, with an average breadth of 20 miles, traversed by the Rio Grande, and hemmed in either by the main chain or by ramifications of the Rocky Mountains. To the south of the town of Santa Fé these average from 6000 to 8000 feet high, but in the vicinity of the town and north of it some snowy peaks rise to the height of 10,000 or 12,000 feet. The higher ranges are covered in many places with pine forests, and the lower with cedars and occasional oaks. The soil is often sandy and the rainfall is small, but irrigation has been practiced in the Rio Grande Valley and other parts of New Mexico for centuries as the extensive remains of pre-historic irrigation works testify. The Pecos Valley, which is generally considered that part of the Pecos Valley in the vicinity of Roswell, Artesia, and Carlsbad, all in New Mexico, is now likewise under irrigation. The climate is dry and healthful. Agriculture is rapidly increasing, wheat, oats, corn, beans, onions, cabbage and hay being among the chief crops, while many fruits, especially apples and grapes are grown. The mesas or table lands, occupy a large part of the surface, making stock raising and wool growing the leading occupations. Minerals occur in abundance, there being enormous deposits of coal, part of it anthracite. Gold, silver, iron, copper, lead and petroleum are all being worked, the gold product annually increasing. Large mica mines are worked, and there are various minerals of importance. New Mexico was ceded by Mexico to the United States in 1848, as a result of the Mexican war. It was created in 1850 into a territory of much more than its present extent, Arizona being cut off from it in 1863 and another portion added to Colorado in 1868. It was admitted to the Union as a state by act of Congress in 1910, subject to the

approval of its constitution by the President, which was given in January, 1912. A large number of the inhabitants are of Mexican origin. Pop. 327,301.

New Milford, a village of New Milford township (town), of Litchfield County, Connecticut, on the Housatonic River, 14 miles N. of Danbury. It has manufactures of tobacco, hats, lime, paint, cold rolled steel, silverware, etc. Pop. 6200.

New Orleans (nū-or'lē-ans), a city and port of Louisiana chiefly on the left bank of the Mississippi, 115 miles above its mouth. The alluvial flat on which it stands is a mere swamp, and the town is only saved from the inundations of the river by a strong *levee* or embankment, built along the city front, and extending 200 miles above and 50 miles below, also around the city in the rear. The nucleus of the town is



Newnham College (nūn'am), an English college for the higher education of women at Cambridge, founded in 1871.

New Netherland, the name given to the territory of the Dutch West India Company (q. v.) in America in 1630. When the English took possession it was named New York, in honor of the Duke of York, who was given a grant of the territory. The island of Manhattan was called New Amsterdam.

Newnan (nū'nan), a city, county seat of Cowetta county, Georgia, 40 miles s. s. w. of Atlanta. It has large engine and boiler works, cotton and oil mills, fertilizer works, etc. Pop. 5548.

built around a bend of the river, from which it derives its popular sobriquet 'the Crescent City.' The streets in this portion are mostly narrow, but many of those in the suburbs are spacious and handsome, and lined with shade trees. The educational institutions include Tulane University, Sophia Newcomb College, a Jesuit college, an Ursuline convent, and others. There are important manufactures, including sugar, cotton-seed oil, salad oil, fertilizer, etc.; also petroleum oil storage tanks, rice mills, molasses refineries, canneries, etc. New Orleans is the most important commercial city in the South and the largest cotton market in the world, with the exception of Liverpool. It is the outlet for the produce of

the countries drained by the Mississippi —sugar, molasses, rice, tobacco, Indian corn, wheat, oats, flour, and above all, cotton. Domestic trade via the Mississippi is very considerable and in addition to the articles named there is a very large commerce in wool and hides and an extensive trade in coal, iron and lumber. Ships of the largest size can now reach the city docks. The yellow fever has often caused great mortality during the summer months; but these epidemics have been overcome by the adoption of the new methods of sanitation. New Orleans was founded in 1717, and transferred to the United States in 1803. Pop. 339,075.

New Philadelphia, a city, county seat of Tuscarawas County, Ohio, on the Tuscarawas River, near the Ohio Canal. Pop. 8542.

New Platonists (plā'tō-nists), a philosophical sect, so called because they founded their speculations on those of Plato: also called the *Alexandrian Platonists*, because their chief seat was at first in Alexandria. Their doctrines (Neoplatonism) had a tendency to unite Platonic ideas with Oriental mysticism, and borrowed elements from various schools. Ammonius Saccas of Alexandria was the founder of the school, and among his pupils were Longinus, Plotinus and Origen, Plotinus (born A.D. 205; died 270) being the chief and the one who contributed chiefly to settle the doctrines of New Platonism. Philosophy, according to him, should know the One which is the cause and essence of all things, the original of primitive light from which everything emanates, not by thought and reflection, but in a perfect manner by intuition, which precedes thought. Intelligence, the product and image of the One, penetrates all things; and the soul proceeds from it, as the forming thought; the soul again seeks the One, the Good, the original cause of the universe. The whole spiritual world is to be considered as one spiritual being. The sensible world is but the image of the intelligible world; time is an image of eternity, and emanates from it. Evil is either only apparent or necessary; but if necessary, it ceases to be evil. The god of Plotinus is a mystical Trinity, consisting of three Hypostases or Substances. Among the pupils of Plotinus, Porphyry and Iamblichus were the most distinguished. Athens became the seat of New Platonism, also called Neoplatonism.

New Plymouth (plim'uth), a town of New Zealand, in the North Island, capital of the province of Taranaki, beautifully situated on the west coast, 120 miles from Auckland. Pop. (1906) 5141.

Newport (nū'port), a municipal borough of England, in the Isle of Wight, on the Medina, which is navigable for small craft. About a mile from the town are the ruins of Carisbrooke Castle. Newport sent two members to Parliament from the reign of Elizabeth till 1867, and later, one. Pop. 11,155.

Newport, a seaport of England, in Monmouthshire, on the river Usk, 12 miles northeast of Cardiff by rail. The docks are spacious, and capable of admitting vessels of any dimensions and burden at all states of the tides. The great trade of the place is the export of manufactured iron. Shipbuilding is carried on to some extent. There are also iron foundries, sail lofts, anchor and chain cable works, etc. Pop. 83,700.

Newport, a city of Kentucky, on the Ohio River, opposite Cincinnati, of which it is practically a residential suburb. Its chief manufactures are iron and steel, while it has also flour mills and distilleries. Pop. 30,309.

Newport, a seaport and formerly one of the capitals of Rhode Island, now county seat of Newport County, at the entrance of Narragansett Bay, 25 miles S. by E. of Providence. It has a splendid harbor, easy of access, deep enough for the largest ships, and defended by several forts. Newport is the most fashionable watering place in the United States, many wealthy citizens having palatial residences here. The winter climate is mild owing to the proximity of the Gulf Stream. Pop. 27,149.

Newport News, a seaport in Warwick County, Virginia, near the extremity of the peninsula formed by the York and James Rivers. It has extensive shipbuilding yards, large wharves and elevators, dry-docks, foundries, machine works, lumber plants, broom factories, canning factories, bottling works, etc. It has the finest natural harbor on the Atlantic coast and is one of the principal ports of the United States. Numerous steamship lines carry on an extensive trade with this port, and it boasts of the greatest steel coal pier in the world. Pop. (1910) 20,205.

New Providence. See *Bahama Islands.*

New Red Sandstone, the lowest group of secondary rocks, lying between the Permian below and the Lias above. See *Geology.*

New Rochelle (rō'shel), a city of Westchester county,

New York, on Long Island Sound, 16½ miles N. E. of New York City, of which it is a residence town. It has many beautiful villas and a factory of druggists' scales. It was founded by Huguenot refugees from France in 1687. Pop. 28,837.

New Ross, a river port of Ireland, on the Barrow, 2 miles below its juncture with Nore, situated in Wexford county, 102 miles by rail S. S. W. of Dublin.

Newry (nū-ri), a parliamentary borough of Ireland in county Down, situated on the Newry at the extreme head of Carlingford Lough, 38 miles S. S. W. of Belfast. It is a handsome, well-built town, and has flour mills and large spinning mills. Newry exports large quantities of cattle and agricultural produce to Liverpool and Glasgow. Pop. 11,956.

New Shetland (shet'land), a group of islands almost destitute of vegetation, in the Antarctic Ocean, about 500 miles S. E. of Cape Horn. They were discovered in 1819, and are sometimes visited by whalers.

New Siberia (si-bē'ri-a), a group of uninhabited islands in the Arctic Ocean, off the north coast of Siberia; area estimated at 9650 square miles. The islands produce neither bush nor tree, but the soil contains much fossil wealth in the shape of mammoth ivory, many of these great animals having left their remains in the island soil.

New South Wales, a state of the Commonwealth of Australia, bounded by Queensland on the N., Victoria on the S., the Pacific Ocean on the E., and South Australia on the W.; area, 310,372 square miles. In order to provide a site for the new federal capital, Canberra, territory of about 900 square miles, was acquired from New South Wales in 1910.

The chief physical feature of the state is a mountain chain (the Great Dividing Range), which extends from north to south nearly parallel to the coast at the distance of from 30 to 140 miles inland. The highest summits are Mount Kosciusko and Mount Townshend in the southeast, Kosciusko (7328 feet) being the highest mountain in the colony, and in Australia. The coast line presents in general bold perpendicular cliffs of sandstone in horizontal strata, and has many indentures serving as ports. The most important rivers are on the west side of the great watershed, the chief being the Murray, the Murrumbidgee, the Lachlan and the Darling, the Murray receiving the waters of the others and carrying them to the sea through S. Australia. The Murray partly belongs also to Victoria, as it forms the boundary between the two states, and the Darling is therefore the most important river of New South Wales. The volume of the rivers depends greatly on the season, and their utility for inland navigation is much impaired by their shallowness. As a general rule the prevailing rock on the east side of the mountain is sandstone, and on the west granite. Much of the sandstone belongs to the Carboniferous system and is accompanied with workable seams of excellent coal. Copper ore of the richest quality has been found in great abundance. Tin exists in large quantities, and iron is very generally distributed. But the chief mineral product of the state has been gold, the total value of which hitherto obtained amounts to about $300,000,000. Silver and lead have also been found. As the area of the state extends over eleven degrees of latitude, and as it contains a good deal of elevated ground, nearly every variety of climate is to be found. The interior plains are very dry, while the coast districts have abundant rains. The winters are mild; and though the hot winds of the warm season are annoying, they are not unhealthy, while storms and electrical disturbances are comparatively rare. The scarcity of water renders much of the surface far better adapted for pasturage than for agricultural purposes, though where the necessary moisture is present heavy crops are obtained. The agricultural land is chiefly under wheat and maize, oats and barley, and there is also a considerable area under sugar, vines, fruit trees, etc. Fruits and vegetables in great variety are grown. But the rearing of sheep and cattle is the chief employment of the people, and wool is the most important article of export. There are about 40,000,000 sheep in the state. The exports include wool, gold coin, tin, sheep, cattle, tallow, coal, copper, etc. The imports are wearing apparel, iron goods and hardware, wine, spirits, and beer, sugar and tea, etc. The industrial works embrace tanneries, woolen factories, soap and candle works, breweries, steam sawmills, shipyards, foundries, machine works, clothing factories, etc.

Sydney is the capital; other towns are Balmain, Broken Hill, Glebe, Leichhardt, Merrickville, Newtown, Paddington and Redfern. New South Wales was discovered by Captain Cook in 1770, and founded as a penal settlement (at Botany Bay) in 1788. The most important events in its history since convict immigration ceased in 1840 are the establishment of representative institutions in 1843; the erection of Victoria into a separate colony in

1850; the important discovery in May, 1851, of extensive auriferous tracts and the rush to the gold mines with consequent great increase in population and prosperity. The state government consists of two houses: the Legislative Council, appointed by the crown; and the Legislative Assembly, elected by the people. Women have voted since 1904. New South Wales sends 27 members to the federal House of Representatives. Pop. in 1911, 1,650,000. See *Australia*.

Newspaper (nûs'pā-per), a periodical publication containing the news. Although something like an official newspaper or government gazette existed in ancient Rome, and Venice in the middle of the sixteenth century had also official news sheets, the first regular newspaper was published at Frankfort in 1615. In England no genuine newspaper of the sixteenth century has been preserved, and it is not till 1622 that we find *The Weekly News from Italy, Germany*, etc., which may be regarded as the first specimen of the regular newspaper that appeared in England. Other journals followed, and one of these, published in November, 1641, under the title of *Diurnal Occurrences, or the Heads of Several Proceedings in Both Houses of Parliament*, is noticeable as the first which furnished a report of the proceedings in Parliament. The oldest existing newspaper in England is the government paper, the *London Gazette*, the first number of which was issued on November 7, 1665, at Oxford, whither the court had retired in consequence of the plague then raging in London. It has since been uninterruptedly published twice a week for more than two centuries. The first London daily paper was published in 1709 under the name of the *Daily Courant*. Among the journals of the eighteenth century may be noticed more especially the *Public Advertiser*, which first appeared in 1726, and became afterwards so celebrated by the publication in it of the famous *Letters of Junius*. The *Morning Chronicle* appeared in 1769, and the *Morning Post* in 1772. The latter is still flourishing; the former lasted over ninety years. The *Times* was first commenced on January 18, 1785, under the name of the *London Daily Universal Register*, which was afterwards superseded by that of the *Times* on January 1, 1788. From the establishment of the *Times* scarcely any attempt to start a daily paper in London for a long time succeeded, with the exception of the *Morning Advertiser* (1794). During the nineteenth century large numbers of newspapers were established.

One of the earliest English local papers was the Norwich *Postman*, published in 1706 at the charge of a penny, but 'a half-penny not refused'; and followed by the *Norwich Courant* in 1714, and the *Weekly Mercury*, or *Protestant's Pocket* (also at Norwich, and still in existence), in 1720. The *Worcester Postman* appeared in 1708, and the *Leeds Mercury* in 1718.

It is interesting to find that the American colonies were not far behind the mother country in establishing newspapers, and equally interesting to know that the most remarkable development of the newspaper has been in the United States, where, in proportion to population, its growth and influence has been much greater than in any other country. In Colonial times the first newspaper to appear was on September 25, 1690, when Benjamin Harris published, in Boston, *Publick Occurrences, both Foreign and Domestick*, a proposed monthly which, however, never got beyond its first issue, being suppressed by the authorities. In 1696 a reprint of *The London Gazette* was issued in New York. The postmaster at Boston, John Campbell, gathered and distributed the news by means of a circular, which he sent to a few friends and the New England governors. This led on April 24, 1704, to the publication of the *News-Letter*, now recognized as the first newspaper published in America. This was printed on a sheet of foolscap, on one side only. It ceased in 1776. December 21, 1719, appeared *The Boston Gazette*; on the day following *The American Weekly Mercury* made its initial bow in Philadelphia. James Franklin established in Boston, *The New England Courant*, in 1721, and it was on this journal that Benjamin Franklin served as printer's apprentice. This paper was so free and independent that it aroused the people of sleepy Boston, and the proprietor was thrown into jail. Then Benjamin Franklin, at that time (February 11, 1722), only sixteen years of age, took charge as editor and publisher. In October, 1725, *The New York Gazette* appeared, being the first to be published in that province. In succession followed: *The New England Weekly Journal* (1727); *The Maryland Gazette*, the same year; *The Universal Instructor in All the Arts and Sciences and Pennsylvania Gazette* (1728), soon after purchased by Benjamin Franklin, who abbreviated its title to *The Pennsylvania Gazette*; *The South Carolina Gazette* (1731); *The New York Weekly Journal* (1733); *The Virginia Gazette* (1736). It will appear from this list that the colonies closely rivaled England in

this field of enterprise. Ante-Revolutionary years brought forth a great increase in the number and energy of the press, the restlessness of the country demanding vent and finding it therein. In opposing the Stamp Act of 1765 the patriotic press had an enormous influence in the colonies. At this time all the newspapers were weekly, monthly or published 'every little while.' It was not until 1784 that the first daily appeared, this being *The American Daily Advertiser*, published in Philadelphia by Claypoole, who first introduced reporting on this continent. This was the commencement of the era of newspaperdom as it at present exists in the United States.

Up to 1833 the American newspapers were distributed almost solely by subscription, at a price which at the present time would appear very high, especially in view of the meager news and the small size of the sheets. There were no street sales, no news stands, and but few were retailed at the offices. In 1835 no paper had a circulation of 5000, and very few even half that number. The *Morning Post*, New York, 1833, was the first penny paper; it lived but three weeks.

Benjamin Day issued *The Sun*, September 3, 1833, at one cent per copy. It gained a large circulation, and in 1867 came under the direction of Charles A. Dana, being then published at two cents. About two years later James Gordon Bennett established *The New York Herald*, which became a power in the land. At a later period, with *The London Telegraph*, it equipped an expedition in search of Livingstone, the famous African explorer and missionary. The *New York Tribune* was founded by Horace Greeley on April 10, 1841; at its outset this was a penny paper. It also, soon after commencing, issued weekly and semiweekly editions. In September, 1851, *The New York Times* was established by H. J. Raymond. June 1, 1860, *The New York World* was started by a number of persons as a newspaper which should contain no police reports, theatrical notices or debasing advertisements. Since these dates the sizes of American newspapers have very greatly increased, the cost of publication having similarly augmented, so that the circulation must necessarily be great and the advertising receipts immense to repay such cost.

We have so far named only the early New York newspaper enterprises, but the great distances in America, the excellent telegraph service, and the aid of the several press associations have stimulated the growth of first-class newspapers in every large city and Philadelphia, Chicago, Boston, Cincinnati, St. Louis, New Orleans, San Francisco, Baltimore and other large cities have long possessed strong, enterprising and reliable journals, equaling or exceeding those of New York, in expenditure, circulation and influence. In this class are *The Public Ledger*, *Record*, *Telegraph*, *Press*, *North American*, *Inquirer* and *Bulletin*, in Philadelphia; in Chicago, the *Tribune*, *Herald*, *Inter Ocean*, *News*, *Times*, etc.; in St. Louis, *The Globe-Democrat* and *Republic;* in Baltimore, *The Sun* and *Herald;* in Cincinnati, *The Commercial Gazette* and *Enquirer;* in New Orleans, *The Times-Democrat* and *Picayune;* in San Francisco, the *Chronicle*, *Examiner*, *Bulletin* and *Call;* in Boston, the *Globe*, *Post* and *Herald*. Beside this nearly every town and county in the United States has one or more daily or weekly newspapers. The first illustrated daily was *The Daily Graphic*, but it proved too expensive, and died in 1888, after a few years' precarious existence. Since then the illustrating of the dailies has become a common feature. Every trade, organization, profession and science now has its representative journal or journals, there are numerous weeklies of literary character, or devoted to science, art, religious or other fields of thought, and Solomon's remark might be paraphrased to read: 'To the making of newspapers there is no end.' The great and rapid presses of recent years, the methods of mechanical type-setting, and the cheapness and excellence of photographic illustrations, have been necessary elements of the great sheets and enormous circulations of the present day, and the twentieth century newspaper is one of the greatest achievements in the whole field of human enterprise.

New Style. See *Calendar*.

Newt (nūt), or Eft, the popular name applied to various genera of amphibians included in the order Urodela ('tailed') of that class. Water-newts, or 'water-salamanders' as they are sometimes termed, possess a compressed tail, adapted for swimming. These forms are oviparous, and though aquatic in their habits they are yet strict air-breathers. The larval gills are cast off on maturity being reached, or about the third month of existence. The larval tail is retained throughout life. The male animals are distinguished by the possession of a crest or fleshy ridge bone on the back. The food consists chiefly of aquatic insects, larvæ, etc. The *Triton cristātus*, or great water-newt, is about

6 inches in length; the *Triton squatiosus* averages about 3 inches; and both are common in fresh water pools and ponds in Britain. The land-newts are included under the genus *Salamandra*. The tail is of rounded or cylindrical form, and is

Great Water-newt (*Triton cristatus*).

therefore not adapted for swimming. The land-newts possess cutaneous glands which secrete a fluid of watery nature; and the popular superstition that if put on a fire these creatures were able to extinguish the flames may have taken origin from the abundant secretion of these glands. *Salamandra maculōsa* of Southern Europe is a familiar species, as also is the *S. alpina* found inhabiting mountainous situations. These forms possess the power of reproducing lost or mutilated toes or even limbs. The newt is quite harmless.

New Testament. See *Bible*.

New Thought, an idealistic system of thought that came into prominence in the latter part of the nineteenth century. It is a direct descendant of New England transcendentalism, but is more practical, being preached and practiced in the small affairs of everyday life. New Thought professes to heal sickness and to remove the terror of death. It is often confounded with Christian Science, but differs from that belief in asserting the *reality* of the world, considering it as an expression of God. The central doctrines of New Thought lie in psychology. It maintains the supremacy of mind over all matter, and identifies it with the perennial stream of energy which permeates existence. The ego is considered as identical with the Supreme Mind, and as capable of erecting conditions and environment; it keeps itself alive in love, law and order by constant affirmation of self.

Newton (nū'tun), a city of Kansas, county seat of Harvey County, 27 miles N. of Wichita in a rich agricultural section, on the Missouri Pacific and Santa Fé railroads. It is the seat of Bethel College, and has flour mills, creameries, ice plants, wholesale floral establishments, etc. Pop. 3600.

Newton, a city of Middlesex County, Massachusetts, adjoining Boston on the S. W., and a favorite place of residence for Boston merchants. It is the seat of a Baptist theological institute, and the Lasell Seminary for women, and has numerous manufactures, embracing cotton, worsteds, hosiery, machinery, starch, paper, silk, and other products. Pop. 39,806.

Newton, Hubert Anson, mathematician, born at Sherburne, New York, in 1830; died in 1896. He was graduated at Yale in 1850, became tutor there in 1853, and professor of mathematics in 1856, filling this position till his death. He became notable for his researches and discoveries regarding the laws governing comets and meteors. In this field he is regarded as the highest authority. He was an editor of the *American Journal of Science*, and was active in founding the National Academy of Science, of which he was a member for life.

Newton, Sir Isaac, the most distinguished mathematician of modern times, was born at Woolsthorpe, Lincolnshire, in 1642, being the son of Isaac Newton, farmer and proprietor of the manor of Woolsthorpe. He was sent at an early age to the village school, and in his twelfth year to the town of Grantham, where he remained till he was entered at Trinity College, Cambridge, in 1660. In 1663-64 he discovered the formula known as *Newton's Binomial Theorem* (see Binomial); and before 1665 he had established his doctrine of fluxions. Some years later Leibnitz also discovered this invaluable method, and presented it to the world in a different form—that of the differential calculus. About this time (1665), being obliged to quit Cambridge on account of the plague, he retired to Woolsthorpe, where the idea of universal gravitation is said to have first presented itself to him, from observing the fall of an apple in his garden. This, however, is legendary and without foundation in fact. In 1666 he returned to Cambridge, was chosen fellow for his college (Trinity College) in 1667, and the next year was admitted A. M. By this time his attention had been drawn to the phenomena of the refraction of light through prisms, and to the improvement of telescopes. His experiments led him to conclude that light is not a simple homogeneous substance, but that it is composed of a number of rays of unequal refrangibility, and possessing different colors. In 1669, being appointed profes-

sor of mathematics at Cambridge, and preparing to lecture on optics, he endeavored to mature his first results, and composed a treatise on the subject. In 1672 Newton was chosen a fellow of the Royal Society, to which he communicated a description of a new arrangement for reflecting telescopes, which rendered them more convenient by diminishing their length without weakening their magnifying powers; and soon after, the first part of his labors on the analysis of light. This led him into controversies with Hooke, Huygens, and several eminent foreigners, Newton maintaining the corpuscular theory, now generally given up in favor of the undulatory theory. In 1675 he addressed another paper to the Royal Society, completing the account of his results and of his views on the nature of light. This treatise, united with his first paper on the analysis of light, afterwards served as the base of the great work, *Treatise on Optics* (1704). He had before this deduced from the laws of Kepler the important law that gravity decreased with the square of the distance, a law to which Sir Christopher Wren, Halley and Hooke had all been led by independent study. No demonstration of it, however, had been given, and no proof obtained that the same power which causes subjects to fall to the earth was that which retained the moon and other planets in their orbits. Adopting the ordinary measure of the earth's radius, Newton had been led to the conclusion that the force which kept the moon in her orbit, if the same as gravity, was one-sixth greater than that which is actually observed, a result which perplexed him, and prevented him from communicating to his friends the great speculation in which he was engaged. In June, 1682, however, he had heard of Picard's more accurate measure of the earth's diameter, and repeating with this measure his former calculations, he found, to his extreme delight, that the force of gravity, by which bodies fall at the earth's surface, 4000 miles from the earth's center, when diminished as the square of 240,000 miles, the moon's distance, was almost exactly equal to that which kept the moon in her orbit. Hence it followed that the same power retained all the other satellites round their primaries and all the primaries round the sun. Two years were spent in penetrating the consequences of this discovery, and in preparing his immortal work, *Philosophiæ Naturalis Principia Mathematica*, commonly called 'Newton's Principia,' which was printed in 1687 at the expense of Dr. Halley. In 1687 Newton was one of the delegates sent by the University of Cambridge to maintain its rights before the High Commission Court when they were attacked by James II, and in 1688 he was elected by the university to the Convention Parliament. In 1696 he was appointed warden of the mint, and in 1699 master. In 1701 he was again returned to parliament by his university; in 1703 he was chosen president of the Royal Society; and in 1705 was knighted by Queen Anne. In his later years he took great interest in chemistry and in the elucidation of the sacred Scriptures. His health was good until his eightieth year, when he suffered from a calculous disorder, which occasioned his death in 1727. He was interred in Westminster Abbey. The most important of Newton's philosophical works are his *Principia;* his *Arithmetica Universalis;* his *Geometria Analytica;* and his *Treatise on Optics.*

Newton, JOHN, an English divine, born in London in 1725; died there in 1807. When eleven years old he was taken to sea by his father, then master of a ship in the Mediterranean trade. His subsequent life was of a rather irregular description until his thirtieth year, when he resolved to qualify himself for holy orders. He was ordained to the curacy of Olney, in Buckinghamshire, in 1764. During his incumbency at Olney he became acquainted with the poet Cowper, who contributed sixty-eight hymns to the collection published by Newton in 1776, and known as the *Olney Hymns.* In 1779 Newton was presented to the living of the united parishes of St. Mary Woolnoth and St. Mary Woolchurch Haw, London, and held it till his death. His best-known works are his *Autobiography* (1764), a *Review of Ecclesiastical History* (1770), and the *Olney Hymns.*

Newton, JOHN, soldier, was born in Virginia in 1823. He was graduated from West Point in 1842, and followed the career of a military and civil engineer. He served with great distinction during the war for the Union, after which he was employed in strengthening New York harbor. It was he who planned and carried out (1876) the removal of the Hell Gate obstruction to navigation in the East River. He was made brigadier-general in 1884 and retired in 1886. In 1887-88 he was Commissioner of Public Works of New York, and in the latter year became president of the Panama railroad. He died in 1895.

Newton-in-Makerfield, OR NEWTON-LE-

Willows, a town of England, in Lancashire, 15 miles east by north of Liverpool. The manufactures include paper works, glass works, a large iron foundry, and a sugar refinery, besides an establishment for the manufacture of trucks for the London & North-Western Railway. Pop. 18,462.

Newton's Laws of Motion. See *Dynamics*.

Newtown (nū'toun), a borough and market town of North Wales, County Montgomery, on the Severn. It has an ancient church (now in ruins) in the early English style. It is the chief seat of the Welsh flannel manufacture, which, however, is now falling off considerably, and being superseded by the manufacture of tweeds, shawls, etc. Pop. 5929.

Newtown, a town of New South Wales, forming a suburb of Sydney, but under distinct municipal government since 1862. It is connected with the city by railroad. With Sydney merchants it is much in favor as a place of residence. Pop. (1901) 22,598.

Newtownards (nū-toun-ärdz'), a town of Ireland, County Down, at the north extremity of Lough Strangford, 9 miles east of Belfast. It consists chiefly of a handsome square, and several streets leading into it. Pop. 9110.

New Ulm, a city, capital of Brown County, Minnesota, on the Minnesota River, 88 miles S. W. of Minneapolis. It has breweries and manufactures of iron, organs, woolens, flour, sash, doors, etc. Pop. 5648.

New Westminster (west'minstèr), a city of British Columbia, on the Fraser River, about 15 miles from its mouth, and near the western terminus of the Canadian Pacific Railway, and also connected by a short line with the United States railway system. It is the headquarters of the foreign and river traffic of the province. Chief industry, salmon canning. Pop. (1911) 13,199.

New Whatcom (hwot'kun), a former city and capital of Whatcom County, Washington, on E. shore of Bellingham Bay, 73 miles N. of Seattle, and on the Great Northern and Northern Pacific railroads. It has large fishing and canning interests, ships hops, coal and lumber, and has woodworking factories, machine shops, etc. Pop. in 1900, 6834. Since the date of this census, New Whatcom has united with Fairhaven, etc., to form the present city of Bellingham.

New Year's Day, the first day of the year from the earliest times observed with religious ceremonies or festive rejoicing. New Year's Day, being the eighth day after Christmas, is the festival of Christ's circumcision. The day is a holiday, celebrated with religious service all over the European continent, though not generally in Britain nor in the United States.

New York (nū-york'), 'the Empire State,' one of the thirteen original United States of North America, having Canada on the north and northwest, from which it is almost entirely separated by the St. Lawrence, Lake Ontario, the Niagara River and Lake Erie; south, Pennsylvania, New Jersey, and the Atlantic; and east, Connecticut, Massachusetts and Vermont. Long Island belongs to the State, whose seaboard otherwise is very small. Total area, 49,204 square miles. The surface in the southeast is traversed by several mountain ranges from New Jersey, one of which, crossing the Hudson, presents a bold and lofty front on both banks, and forms magnificent scenery. The Catskill Mountains have the greatest average height, and in Round Top attain 3800 feet; but the culminating point is Mount Marcy, which belongs to the Adirondack group, and has a height of 5467 feet. In the west the large tract extending between Lake Ontario on the north and Pennsylvania on the south is generally level. The principal rivers are the Hudson, Delaware, Susquehanna, Mohawk, Oswego, Genesee, Niagara, Allegheny and St. Lawrence. The falls of Niagara partly belong to the State. Besides the frontier lakes Ontario and Erie, there are many lakes of very considerable size, such as Lakes Champlain, George, Oneida, Cayuga, Seneca, etc. The climate is somewhat variable, but with some local exceptions very healthy. The greater part of the soil is arable, and some of it extremely fertile, and New York occupies a foremost place in agriculture. The largest crops are oats, corn and potatoes, also wheat, barley, hops and grapes, and other fruits. The mountain districts are mainly good grazing land and much attention is paid to the rearing of stock, both for feeding and for dairy purposes, more milk being produced than in all other states of the Union combined, and more butter and cheese than in any other state. The forest trees present a great variety, but the forest area, which used to include nearly half the State, has been much reduced of late years. The lake and ocean fisheries are of great value,

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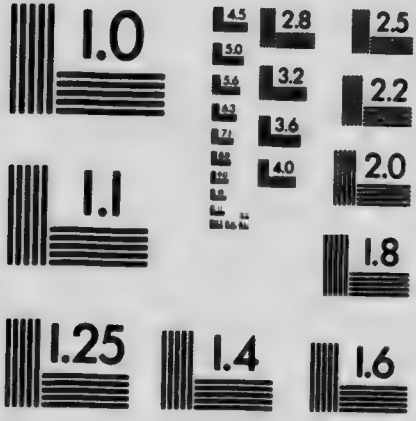

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an important part of them being the utilizing of fish for oil and fertilizers. The most important mineral is iron. Lead ore is also found, and a vast amount of salt is made from the salt springs. Granite, marbles, sandstones, limestones, clay, sand, and all building materials are abundant. The mineral springs of Saratoga are the most celebrated in America. The manufactures surpass in value those of any other State. The foreign and internal trade are of great importance. The latter is carried on chiefly by canals and railroads in conjunction with the Hudson. Of the canals the most important are the Erie Canal and the more recent State Barge Canal. (See *Erie Canal.*) The length of railways is over 8400 miles. For the higher branches of education ample provision has been made, there being some thirty universities and colleges, and primary education is free. Albany is the capital. The territory of New York was partially explored in 1609 by Henry Hudson, an English navigator in the service of the Dutch East India Company, and soon after was colonized by the Dutch, who were expelled by the English in 1674. During the war with the French the country was laid almost desolate by the ravages of war and the incursions of Indians. In the Revolutionary war many important events took place in New York territory. The first State constitution was adopted in 1777. In 1917 it granted to women the full right of suffrage. Pop. 9,113,614.

New York, City of, the chief city and seaport of the State of New York and of the United States, and in respect of population and commerce the metropolis of the American continent and the second city of the world. The city is admirably situated at the confluence of the Hudson River from the north, and the East River from the northeast (the latter a prolongation of Long Island Sound), their united waters expanding into New York Bay, which forms a magnificent harbor. The approach from the sea is either by the East River and Long Island Sound, or by the wide channel between Sandy Hook and Long Island, and thence by the Narrows between Staten Island and Long Island. In the bay are several islands, notably Ellis Island, the immigrant station; Hoffman and Swinburne Islands, occupied by quarantine institutions; Governor's Island, headquarters of the military division of the Atlantic; and Bedloe's Island, on which is the world-famous Statue of Liberty (see *Liberty*). The city is now divided into five boroughs: Manhattan, Bronx, Brooklyn, Queens and Richmond (about 330 square miles in all).

The plan upon which the newer part of the old city is laid out consists of parallel *avenues*, 100 feet or more in width, named numerically from *first* to *eleventh*, and running from south to north as far as the northern extremity of Manhattan Island, intersected at right angles by *streets* also numerically named, and crossing the city from east to west. Fifth Avenue (7 miles long, 100 feet wide) is the great central avenue, and all the streets running east from it have the prefix *east*, and those running west the prefix *west*, and the houses are numbered accordingly. Fifth Avenue is *par excellence* the fashionable and aristocratic street. The main business thoroughfare is Broadway (15 miles long and 80 feet wide), which in the activity and variety of its traffic, the elegance of its shops, and the massiveness and grandeur of many of its public and private buildings, is one of the most interesting streets in the world. Madison Avenue, next east of Fifth Avenue, vies with it as a street of costly private houses and beautiful churches. The streets in general are excellently paved, and the cleansing of them is well attended to. They are traversed in all directions by electric surface cars, supplemented by elevated railroads with electric trains giving a speed of 15 miles per hour, and by several great subways of underground railways, which traverse the whole length of Manhattan Island and connect with Brooklyn and Jersey City by tunnels under the East and North, or Hudson, rivers.

The most important of the Hudson River tunnels are those of the Pennsylvania Railroad, crossing the river at Thirty-third Street, Manhattan, and enabling the trains from the south and west to be brought into the heart of New York to the great Pennsylvania terminal at Seventh and Eighth Avenues, between Thirty-first and Thirty-third Streets. The Hudson and Manhattan Company operate tunnels from Jersey City to the Hudson Terminal Building on Cortlandt Street, Manhattan, and from Jersey City to Christopher Street, the latter tunnels continuing up Sixth Avenue to Thirty-third Street. From the Pennsylvania terminal, tunnels run east under Thirty-second Street and continue under the East River to Long Island, where connection is made with New England by the new Hell Gate Bridge (*q. v.*). Of the tunnels under the East River, the oldest is the extension of the first subway, passing under the river from the Battery, Manhattan, to Borough Hall, Brooklyn. The Belmont tunnel, crossing from Forty-second Street, Manhattan, to Long Island City, was completed in 1908.

The Harlem River is crossed by many bridges, some of which carry the trains of the New York Central Railroad, by way of a massive viaduct to the Grand Central Depot on Forty-second Street; others are for the street-car and elevated railroad traffic. The first bridge across the East River (the Brooklyn Bridge; length of river span, 1595 feet) was opened to the public in 1883. The Williamsburg Bridge (total length from Clinton Street, Manhattan, to New Street, Brooklyn, 7308 feet), was opened in 1903. The Queensboro Bridge (total length from Fifty-ninth Street, Manhattan, to Crescent Street, Queens, 7449 feet) was opened in 1909. The Manhattan Bridge (total length, from Bowery, Manhattan, to Brooklyn terminal, 6855 feet) was opened in 1909. Hell Gate Arch Bridge (*q. v.*), spanning the East River at Hell Gate between Ward's Island and Astoria, Long Island, was opened April 1, 1917.

New York has been called the city of cliff dwellers, and with reason, for nowhere else in the world is the apartment house so much in evidence. As many as 200 families are housed in some of these huge buildings, which range from the plainest kind of brick structures to the most elaborate steel and concrete edifices, hundreds of which line the east bank of the Hudson. The city also is unique in its cluster of mammoth business buildings towering up 40 and 50 stories from the narrow tongue of Manhattan Island, presenting, as viewed from the harbor, a skyline that is unparalleled. The Metropolitan Life Building, facing on Madison Square, is over 700 feet high, and is one of the most beautiful of the so-called 'skyscrapers.' The Woolworth Tower, on lower Broadway, probably the tallest business building in the world, is 750 feet in height, with 51 stories. Another striking tower building on Broadway is the Singer Building, 41 stories, 612 feet high. At the junction of Broadway, Fifth Avenue and Twenty-third Street—called the windiest corner in the world—is the well-known Flatiron (Fuller) Building, 20 stories high. Other notable buildings are the Municipal Building, at Park Row and Centre Street, 560 feet high; Bankers' Trust Co., at Wall and Nassau Streets, 539 feet; City Investing Building, on Broadway, 486 feet; Equitable Building, 120 Broadway, 485 feet; the Times, at Broadway and 42d Street, 419 feet; Western Union, 195 Broadway, 403 feet; Heidelberg, Broadway and 42d Street, 410 feet; Pulitzer (World) Building, on Park Row, 375 feet; and the Hudson Terminal Building, on Church Street, 275 feet.

There are nearly a hundred theatres in the four boroughs of New York City. Among these are the Metropolitan Opera House, at 39th Street and Broadway; the Manhattan Opera House, on 34th Street; the old Academy of Music, on 14th Street, which has succumbed to the moving pictures; the Liberty, the Casino, the Globe, the New Amsterdam, the Century, and many others. The Hippodrome, seating 5000 people, is on 6th Avenue at 43d Street. The Winter Garden, seating 1535, is at Broadway and 50th Street. In the Brooklyn borough the new Academy of Music on Lafayette Avenue and St. Felix Street, is the most striking of the theatres.

The hotels include the Waldorf-Astoria at 34th Street and Fifth Avenue; the St. Regis and the Gotham at Fifth Avenue and 55th Street; the Knickerbocker, Belmont and Manhattan on 42d Street; the Savoy and Plaza at Central Park; the Vanderbilt, the Park Avenue, and the Murray Hill on Park Avenue; the Astor, McAlpin, and a number of others on Broadway; the Ritz-Carlton at Madison Avenue and 46th Street; and the Martha Washington, on Fourth Avenue at 29th Street.

New York is plentifully supplied with concert halls, the best known of which are the Carnegie Hall, at 7th Avenue and 57th Street, with a seating capacity of 2800; and the Aeolian Hall on 43d Street.

There are over 2000 churches in the city. The most notable are Trinity Church, on Broadway, at the head of Wall Street, an immensely wealthy church; old St. Paul's in Trinity Parish, also on Broadway, dating back to the days when that great thoroughfare was a country road; Grace Church, at Broadway and 10th Street; the new Protestant Episcopal Cathedral of St. John the Divine, on Morningside Heights, the building of which was begun in 1885, but will not be completed for many years; St. Patrick's Cathedral (Roman Catholic), on Fifth Avenue at 50th Street, one of the most imposing Gothic edifices in America; the Marble Collegiate Reformed Church on Fifth Avenue at 29th Street; the Jewish Temple Emanu-El at Fifth Avenue at 43d Street; the Brick Presbyterian Church, Fifth Avenue at 37th Street, one of the oldest in the city; old John Street Church, in downtown New York, famous as the cradle of Methodism; Broadway Tabernacle (Congregational) at 56th Street and Broadway; the Christian Science Churches on Central Park West, at 96th and 68th Streets; Fifth Avenue Baptist Church on West 46th Street; St. Paul's Methodist, on 86th Street and West End

Avenue; and the old Unitarian Church of All Souls on Fourth Avenue at 20th Street.

In the city there are many beautiful parks. The oldest and best known is Central Park, situated near the center of Manhattan Island. It is 2½ miles long and a little over half a mile wide, giving an area of 840 acres, which have been converted into a beautiful and much frequented pleasure ground. In the newer section of the city, to the northward, a number of large parks have been laid out (Bronx, Van Cortland, Crotona and Pelham Bay). Prospect Park, Brooklyn, contains 526 acres, and there are many smaller parks, squares and boulevards for public use. Bronx Park contains a large zoölogical garden, and the old Battery, at the southern extremity of Manhattan, contains an attractive aquarium, abundantly supplied with sea and river fishes.

The school system is well developed, and among the institutions for higher education are Columbia University (founded as King's College in 1754); New York University, founded in 1831; the Normal College, for young women; the Cooper Union, and a number of medical, theological, and other educational institutions. There may be named also the Metropolitan Museum of Art, rich in paintings, antiquities, etc.; the American Museum of Natural History, equally rich in its collections; the National Academy of Design, and numerous other scientific, artistic, and other institutions.

The New York Public Library, constructed in 1895 by the union of the Astor, Lenox and Tilden foundations, is seated in a magnificent new building. The New York Free Circulating Library was later added, the total collections numbering considerably more than 1,000,000 volumes. In addition there are numerous other public and private libraries, among the latter being the large library of Columbia University. Among the monuments are statues of Washington, Lincoln, Farragut, Franklin, Shakespere, Burns, Scott, etc., an ancient Egyptian obelisk presented by the Khedive of Egypt; Bartholdi's great statue of Liberty already referred to, and Grant's Tomb. New York is abundantly supplied with theaters, opera houses and other places of amusement, with large hotels, and with many massive and attractive public and municipal buildings, far too numerous to mention here.

Trade, etc.—New York is primarily a commercial city and a center of distribution of domestic and foreign products. The State of New York in 1911 provided a sum of nearly $10,000,000 for the construction of 13 freight terminals for the Barge Canal (Erie) traffic. The industries are rather of a varied character than individually important, the chief being connected with clothing, meat packing, printing and publishing, brewing, etc. Its commerce is enormous, exports and imports, approaching in value $2,000,000,000 annually. Immense numbers of immigrants from Europe arrive here. The water supply is furnished from Croton Lake, an artificial reservoir supplied by Croton River, from which the water is conveyed by an aqueduct of stone masonry of a capacity of over 300,000,000 gallons per day a distance of 40 miles to New York. A larger reservoir, the Ashokan, has been constructed in the Catskill Mountain region, 90 miles north of the city, capable of supplying 500,000,000 gallons a day even in dry years; cost of Catskill system, $180,000,000.

History.—Manhattan Island was first visited in 1609 by Henry Hudson. It was first settled three years after on the southern extremity. The Dutch settlement here formed gradually grew into a town named New Amsterdam, which in 1648 had 1000 inhabitants. In 1664 it surrendered to the British, and took its new name from the Duke of York, into whose hands it came. In 1673 the Dutch regained possession, but lost it finally in the following year. New York was taken from the Americans by the British at the beginning of the war of Independence (August 26, 1776), and held by them till its close (evacuated November 25, 1783). It was the capital of the State of New York from 1784 to 1797, and from 1785 to 1790 it was the seat of the Federal government, and at New York Washington was inaugurated to the presidency in 1789. During the war of 1812-15 its foreign commerce was almost annihilated. The first regular line of packet ships to Liverpool was started in 1817. The opening of the Erie Canal in 1825 gave the city a preëminent command of internal commerce. Since that date its progress has been rapid, almost beyond example. Pop. in 1850, 515,547; in 1870, 942,292; in 1880, 1,206,600; in 1890, 1,800,891; 1900, 3,437,202; 1910, 4,766,883.

New Zealand (zē'land), a group of islands belonging to Great Britain in the South Pacific Ocean, consisting chiefly of two large islands, called North and South (or Middle) Island, and a third of comparatively insignificant size, Stewart Island; length of the group, north to south, measured on a line curving nearly through their centers, about 1200 miles; area, 105,340

square miles (or 15,000 less than the United Kingdom). Previous to 1876 New Zealand was divided into nine provinces, four in the North Island (Auckland, Taranaki, Wellington and Hawke's Bay) and five in the South Island (Nelson, Marlborough, Canterbury, Otago and Westland); but in 1876 the provinces as such were abolished, though the names are still in common use, and the whole of New Zealand is now divided into 63 counties. Pop. 900,000, including 43,143 Maoris and 2857 Chinese. Capital, Wellington, in North Island; other chief cities: Dunedin, Auckland, Christchurch.

North Island, the most northern of the group, and separated from South Island by Cook's Strait, which, where narrowest, is about 25 miles wide, is very irregular in shape, and much broken by deep bays and projecting headlands. Its area is estimated at 44,736 square miles. It consists of a main body with projections running east, south, and west, and a long narrow projection 280 miles in length, which stretches north with a curve in a westerly direction. The main body of the island, as well as its peninsulas, has for the most part a very rugged and mountainous surface; and besides being traversed from south to north by chains of mountains reaching a height of 6000 feet, presents a number of lofty isolated volcanic peaks, among which the most conspicuous are Tongariro (6500 feet) occasionally active, and Ruapehu (9195 feet) and Mount Egmont (8300 feet), extinct volcanoes. The coast line of North Island contains many excellent natural harbors, especially those of Wellington on Cook's Strait, and of Auckland on the isthmus of the northern projection. The streams are extremely numerous, but are mostly mere torrents, which bring down immense deposits of shingle. The largest of the rivers are the Waikato (200 miles) and the Wanganui (about 120). Most of the streams have their sources in lakes embosomed among mountains covered with magnificent forests, and presenting scenes of extraordinary beauty. The largest of all the lakes is Taupo, situated near the center of the island, about 36 miles long by 25 miles broad. To the northeast occur a number of lakes, familiarly known as the 'Hot Lakes,' there being here hot springs and other volcanic phenomena. In this region there is much remarkable scenery, but the most interesting features, known as the Pink and White Terraces, were destroyed by a volcanic eruption in June 1886.

South Island is of a much more compact and regular form, and may be considered as a parallelogram; area, about 55,225 square miles. With exception of the north coast, the southwest coast, and a remarkable spur on the east coast called Banks' Peninsula, the coast line is very continuous. On the north coast, from Cape Farewell to Cape Campbell, are numerous good harbors; in the southwest are a series of narrow fiords. South Island is traversed from north to south by a lofty central mountain chain, which has an average height of about 8000 feet; while Mount Cook, near the west coast, the culminating point of New Zealand, is 13,200 feet high. Among these mountains are fields of perpetual snow, and glaciers of great size, stretching down on the southwest to no great distance from the sea. Along the east coast several extensive plains exist. The largest river is the Clutha, which has a course of 150 miles, and enters the sea near the southeast angle of the island. There is some magnificent lake scenery. The largest lakes are Wakatipu and Te Anau, covering 114 and 132 square miles respectively. *Stewart Island* is separated from South Island by Foveaux Strait, about 15 miles wide. It is of a triangular form, with an area estimated at 1300 square miles. A great number of smaller islands belong to the New Zealand group. The Chatham Islands and Kermadec Islands are outlying dependencies.

Minerals, Climate, Natural Productions.—With mineral wealth New Zealand is liberally supplied. Coal is obtained in many parts, and copper has been worked on a small scale. Gold is worked both in North and South Island. Extending through 12° of latitude, and having a greatly diversified surface, New Zealand has necessarily a very varied though a remarkably healthy climate. In temperature it resembles France and North Italy, but the humidity is considerably greater. Rapid changes are a notable feature of the weather. Among vegetable productions the most characteristic are the ferns (130 different species), which form almost the only vegetation over immense districts. Some of them are more than 30 feet high, and remarkable for the elegance of their forms. One of the most common is the *Pteris esculenta*, the root of which is used as food by the natives and greedily devoured by pigs. Another remarkable plant of great economical value (even furnishing an article of export) is the flax-plant (*Phormium tenax*). A number of the forest trees furnish valuable timber. Among others is the kauri or damar pine. Flowering plants are remarkably scarce, and

there are no indigenous fruits. The soil and climate of New Zealand, however, produce in perfection every English grain, grass, fruit, and vegetable. In the gardens of the warmer valleys fruits of a semitropical character—the pomegranate, citron, orange and olive—might be raised. In animals New Zealand is singularly deficient, only a sort of dog (now extinct), a rat, and two species of bats being indigenous. Rabbits have been introduced and have multiplied so as to become a perfect pest; pigs now run wild as well as cats. Pheasants, partridges, quails and red and fallow deer have also been successfully introduced. All the common European quadrupeds appear to be easily acclimatized. The native birds are remarkable neither for numbers nor for beauty of plumage. Pigeons and parrots are the most common. The apteryx, a peculiar bird so called from having no wings, is one of the most remarkable of the native birds. Among others are the huia or parson-bird and the owl-parrot. The gigantic moa is now extinct. The chief reptiles are a few lizards. The coast teems with fish, and seals are still numerous in some parts.

Aborigines.—The original natives of New Zealand, called Maoris, a people of Polynesian origin, are supposed to have emigrated from the Navigators' or the Sandwich Islands some centuries ago. Split up into numerous petty tribes, and wasting each other by internecine feuds, their numbers have been so reduced that they do not now much exceed 40,000, all of whom, with the exception of a few hundreds, are located in the North Island. By missionary efforts a great part of them have been converted to Christianity. They have acquired in many instances considerable property in stock, cultivated lands, etc., and in the neighborhood of the settlements they are adopting European dress and habits.

Industry, Commerce, etc.—Stock-rearing and agriculture are the most important industries, though mining is also an important occupation. There are about 20,000,000 sheep in the colony, and by far the most important export is wool, frozen meat and grain being also largely exported. Gold is the most valuable export next to wool; others are tallow, timber, kauri-gum. The imports naturally are chiefly manufactured goods: drapery, ironmongery, machinery, etc.; also tea, sugar, spirits, etc. There are upwards of 2500 miles of government railway in New Zealand open for traffic.

History.—New Zealand was first discovered by Tasman in 1642, but little was known of it till the visits of Cook in 1769 and 1774. The first permanent settlement was made by missionaries in 1815, but no regular authority was established by the British government till 1833, when a resident was appointed, with limited powers, and subordinate to the government of New South Wales. In 1840 New Zealand was erected into a colony; in 1841 it was formally separated from New South Wales and placed under its own independent governor; and in 1852 it received a constitution and responsible government. Troubles with the natives of the North Island about land have given rise to frequent Maori wars, and so late as 1886 a disturbance about land arose. In 1865 the seat of government was removed from Auckland to Wellington. In 1870 the New Zealand University was established. State socialism began in 1881, and has been extended to include many fields of industry since then. In 1907 the style Colony of New Zealand was changed to Dominion of New Zealand. During the European war (*q. v.*) the New Zealand troops participated in the fighting at the Dardanelles and on the western battle front.

New Zealand Flax. See *Flax* (*New Zealand*).

New Zealand Spinage (*Tetragonia expansa*), a succulent trailing plant inhabiting New Zealand, Tasmania, Australia, South America and Japan. It has been introduced into Europe and North America as a substitute for spinage.

Ney (nā), MICHEL, Duke of Elchingen, Prince of the Moskwa, marshal and peer of France, was born in 1769 at Sarre-Louis, in the department of the Moselle. He entered the military service in 1788 as a private hussar, and rose by degrees to the rank of captain in 1794, adjutant-general in 1796, general of division in 1798, and as such he distinguished himself in the Rhine campaign. Appointed marshal of the empire by Napoleon in 1805, he achieved victory over the Austrians at Elchingen, and took part in the battle of Jena. During the Russian campaign he commanded the third division at the battle of the Moskwa, and conducted the rear guard in the disastrous retreat. In the campaign of 1813 his skill and courage decided the victory of Lützen, and assisted at Bautzen and Dresden. When Napoleon abdicated and the Bourbon dynasty was established Ney took the oath of allegiance to the king and received a command; but when the emperor landed from Elba his old general joined him at Lyons and opened the way to Paris. In

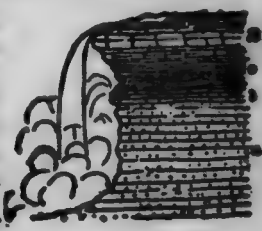
the campaign which followed it was Ney who led the attack on the British center at Waterloo, and after five horses had been killed under him he only retired from the field at nightfall. When the allies entered Paris he escaped in disguise to the provinces, but was finally arrested, brought back to Paris, tried for treason, and found guilty. The sentence was executed December 7, 1815.

Nez Perces (nez pers), a tribe of Indians, chiefly settled in Idaho, on the Lapwai River. The Nez Perces proper were loyal to the whites, but in 1877 the treaty reductions of their reservation led to a sanguinary outbreak on the part of the non-treaty members of the tribe, who attacked settlers, fought the soldiers, and then fled across Idaho, Montana and Dakota. They were overtaken and beaten, and the survivors (some 350) transferred to the Indian Territory. In 1885 some were restored to Idaho, and the rest joined the Colville Indians, in Washington.

Ngami (n'gä'mē), a former South African lake to the north of the Kalahari Desert; length about 37 miles, breadth about 15 miles. Its only feeder is the Teoge, and its outlet the Zouga. Ngami was first visited by Dr. Livingstone and Mr. Oswell in 1849. It was for the most part shallow, and has now practically disappeared, its place being taken by a reed-grown muck.

Nganhwuy (ngân-hwī'), a province of China, bounded by the provices of Kiangsu, Honan, Hupeh, Kiangsi and Chekiang. Green tea is extensively cultivated, and the province is rich in minerals. Pop. about 23,600,000. Capital Ngan-king-foo, on the left bank of the Yangtse-kiang; pop. 40,000.

Niagara (ni-ag'ä-rä), a river of North America, separating Ontario from the State of New York, and conveying the waters of Lake Erie into Lake Ontario. It is 33½ miles long, and varies in breadth from 1 to 4 miles, being about the former where it issues from Lake Erie, near the city of Buffalo. It is occasionally interspersed with low wooded islands, the largest of which, Grand Island, has an area of 17,000 acres. The total descent in the river's course between the two lakes is 331 feet. About 15 miles from Lake Erie a sudden narrowing and descent in the channel causes what are called the Rapids, below which the river, here divided by Goat Island, is precipitated over the celebrated Falls. The rush of the river is such that the water is shot a clear 40 yards from the cliff, leaving a narrow pathway for a short distance below for the adventurous. The cataract on the south side of the island, called the American Fall, is 162 feet high, width 1125 feet; that on the Canadian side, called the Great or Horseshoe Fall, is 149 feet high, width 2100 feet. Below the falls the river rushes with great velocity down the sloping bottom of a narrow chasm for a distance of 7 miles. About 3 miles below the falls a sudden turn in the channel causes the water to whirl in a vast circular basin before renewing its journey. Logs and other floating material sometimes continue whirling here for many days. Several bridges cross the river below the falls, one of them a suspension bridge 1190 feet long and 190 feet above the water. The land on both sides of the river has been converted into an international park.



SECTION OF THE HORSESHOE FALL, NIAGARA.

a, Medina Sandstone, 300 feet; *b*, Clinton Limestone and Shale, 30 feet; *c*, Niagara, 165 feet, of which 85 feet are seen at the Fall.

Niagara Falls a city of Niagara County, New York, on the Niagara River, 22 miles N. N. W. of Buffalo. The electrolytic works develop enormous horse-power from the cataract waters, which is partly used in a large number of manufacturing establishments. The place is a popular resort. Pop. 30,445.

Niagara Falls, formerly CLIFTON or SUSPENSION BRIDGE, a city of Welland County, Ontario, Canada, 40 miles S. S. E. of Toronto, on the west bank of the Niagara opposite the falls. Pop. (1911) 9248.

Niagara Falls, POWER PLANT, was constructed from the plans of the International Niagara Commission which met in London, England, 1889. They considered the utilization of electricity and compressed air for the conveyance of the power and selected the former; with a canal, one mile in length with wheel-pits 178′ deep, 140′ long and 20′ wide, each pit having a turbine wheel weighing forty tons. The turbines are attached to a dynamo each one of which develops five thousand horse-power. There are many of those in operation, other plants having been founded on the Canadian side of the river. Tunnels cut through solid rock carry off the waste water. Buffalo, twenty-two miles distant, and other cities are furnished with this electric current. A treaty signed between the United States and Great

Britain regulates the use of Niagara water power, giving Canada the privilege of using 32,100 cubic feet of water per second and the United States 16,300. Canada can supply power to the New York side. A greater use of water would be detrimental to the falls.

Niam Niam (ni'am ni'am), a negro race inhabiting a district of North Central Africa extending from 29° to 24° E. lon., and probably further to the west; and from about 4° to 6° N. lat. The Niam Niam are a hunting and agricultural people, and are of a compact and powerful build, with long nose, small mouth, broad lips and reddish-brown or copper-colored skin. Apparently at a comparatively recent period they have wandered from the west to their present habitation, and have become masters of the country. They have a well-founded reputation for cannibalism, though some tribes seem to have renounced the practice.

Niare, or BUSH COW (*Bos brachyceros*), a small wild ox, native to Western Africa.

Nias (nē-äs'), an island in the Malay Archipelago, lying west of Sumatra; length about 70, breadth about 20 miles. Its inhabitants, of the Malay race, are numerous, industrious and frugal, but at the same time avaricious, vindictive, and sanguinary. Rice, sugar and pepper are grown extensively. It belongs to the Dutch. Pop. 100,000.

Nibelungenlied (nē'bē-lụng-ēn-lēt; 'Lay of the Nibelungen'), a German epic written in the Middle High German dialect, and dating from about the twelfth century. It is divided into thirty-nine sections, contains some 6000 lines, and is constructed in four-lined rhymed stanzas. The tale, briefly told, is this: Kriemhild lives with her brother Gunther, king of Burgundy, at Worms. To his court comes Siegfried, son of Siegemund, king of the Netherlands. This Siegfried is possessed of the Nibelungen gold hoard, a magic sword, a cloak of darkness, besides great strength and courage. Thus equipped he comes to the court and wins the love of Kriemhild. In gratitude for his success Siegfried undertakes to assist Gunther, the brother of his bride, in his efforts to win the hand of Brunhild, an Icelandic princess. Together they sail for the far north, and there Gunther succeeds, with the help of Siegfried's cloak of darkness, in winning the three test games of skill which the lady played with him. Still on the bridal night the princess mocked at Gunther her husband, wrestled with him, bound him, and hung him up scornfully against the wall. But the next night Gunther, with the invisible help of his friend Siegfried, overcomes the bride, and the latter carries away her girdle and ring. Siegfried and his wife Kriemhild next appear on a visit to the Burgundian court at Worms, where Gunther the king now resides with his wife Brunhild. While there the two ladies quarrel, and in her rage Kriemhild taunts Brunhild with having had dealings with her husband Siegfried, and in proof thereof she produces the ring and girdle which he took from her chamber on the bridal night. Brunhild bitterly resents this calumny and meditates vengeance. This she accomplishes by the hand of Hagen, one of her husband's warriors, who slays Siegfried in his sleep. The widow's revenge completes the story.

Nicæa (ni-sē'a; Nice), an ancient city of Asia Minor, capital of Bithynia, about 45 miles S. E. of Byzantium. Under the Roman Empire it retained long an exalted rank among the eastern cities, and is renowned in ecclesiastical history for the famous council held here in the reign of Constantine (A.D. 325), in which the formula bearing the name of the Nicene Creed was drawn up. After the foundation of the Latin Empire in Constantinople in 1204 the Greek Emperor Theodorus Lascaris made Nicæa the capital of his empire, which it continued to be until in 1261 the Greek emperors recovered Constantinople. It was finally taken by the Turks in 1330.

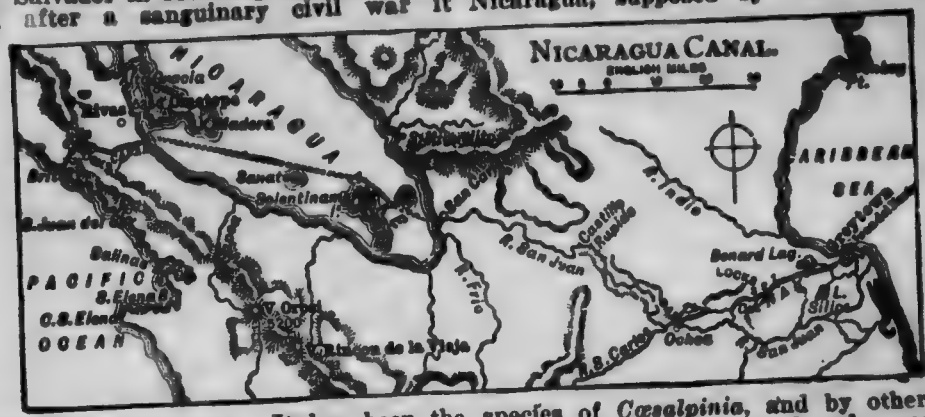
Nicander (ni-kan'der), a learned Greek physician and poet, a native of Claros, near Colophon, in Ionia, who flourished about 185-135 B.C. Two of his poems are extant.

Nicaragua (nē-kä-rä'gwä, or nik'a-), a republic of Central America, extending from the Pacific Ocean to the Caribbean Sea, and having on the north and northeast the State of Honduras, and on the south Costa Rica; area, about 51,660 square miles. The State is traversed by the Cordillera of Central America, between which and the Pacific coast there is a remarkable depression extending for 300 miles and containing Lake Nicaragua (which see) and the smaller Lake Managua at no great elevation above the sea. Along the coast is a chain of volcanic cones, rising in some cases to 7000 feet. From the Cordillera the surface slopes to the Carribean coast (Mosquito Territory), which is low and swampy. Nicaragua has a considerable number of rivers, the chief flowing to the Caribbean Sea, as the Coco and the San Juan. Veins of silver, copper and gold occur. The climate is on the whole healthy, the interior and mountainous

parts being more dry and cool than on the coasts. The vegetable productions include indigo, sugar, coffee, cacao, cotton, maize, rice, etc. Fruits of various kinds are plentiful. One of the principal sources of wealth consists in cattle, of which there are great numbers, the high plains affording excellent pasturage. The capital is Managua. In 1821 Nicaragua joined Guatemala, Costa Rica, Honduras and Salvador in revolting against Spain, and after a sanguinary civil war it achieved independence. It has been the scene of various revolutions and counter-revolutions. An outbreak in 1912, grew so serious that the intervention of the United States was necessary to bring about peace. The republic is governed by a president elected every four years, a Senate and a House of Representatives. Corinto, on the Pacific, and Greytown, on the Caribbean Sea, are the chief ports. Pop. estimated at 550,000.

Nicaragua, LAKE, an extensive sheet of water in Central America, in the State of same name, 90 miles long northwest to southeast; greatest breadth, 40 miles; mean, 30 miles; 110 feet above the Pacific, from which it is separated by a strip of land 12 miles wide. The river San Juan de Nicaragua flows from its southeastern extremity into the Caribbean Sea, and at its northwestern extremity it is connected with the smaller Lake of Managua, or Leon, by the river Penaloya. Steamers now ply upon it, as it forms a link in the traffic route.

Nicaragua Canal, a canal that was projected for the purpose of providing a waterway for ships across Central America from the Pacific to the Atlantic, passing through Nicaragua, and utilizing Lake Nicaragua and the San Juan River. The total length of the route was to be 170 miles from Greytown, on the Caribbean Sea, to Brito, on the Pacific. Of this 64½ miles were to consist of free navigation in the San Juan River, and 56½ of free navigation in Lake Nicaragua; total 121 miles. A beginning had been made by the United States government, when this work, estimated to cost $180,000,000, was abandoned for the Panama route. See *Panama Canal.*



Nicaragua Wood, the wood of a tree growing in Nicaragua, supposed by some to be a species of *Cæsalpinia,* and by others of *Hæmatoxylon.* This wood and a variety called peach-wood are exported for the use of dyers.

Nicastro (nē-kăs'trō), a town in South Italy, province of Catanzaro, situated W. of the Apennines, in the Bay of Sant' Eufemia. It is the see of a bishop and a place of considerable trade. Pop. 13,671.

Niccolini (nēk-ko-lē'nē), GIOVANNI BATTISTA, an Italian dramatist, born in 1785; died in 1861. He studied at the University of Pisa; published his first poem in 1804; became in 1807 librarian and professor of history in the Academy of Fine Arts in Florence, and in 1810 produced *Pollissena,* his first tragedy. Other tragedies followed, partly on classical, partly on modern subjects, which procured for their author a wide fame.

Nice (nēs; Italian, *Nizza;* ancient, *Nicæa*), a city and seaport of France, on the Mediterranean, capital of the department of Alpes Maritimes, beautifully situated near the base of the Maritime Alps, and on both sides of the Paglion, a mountain torrent of short and rapid course. The original town was clustered round a hill near the shore, crowned by a strong castle. The new city lies to the west and north of this, on the right bank of the Paglion, and continues to spread rapidly. There are

two squares, many fine boulevards; along the whole front of the city towards the sea is a broad public promenade, and the pier has a bathing establishment attached. Nice is much resorted to as a health resort during winter. The climate is mild, the mean temperature being 60° F.; but the changes of wind are sudden, especially in spring. Nice possesses silk, cotton and paper mills, oil mills, etc. The harbor or port is small and open to the southeast. The exports consist principally of oil, wine and silk, with essences, perfumes, etc. Nice belonged to Italy previous to 1860. Pop. 142,940.

Nice, COUNCILS OF, ecclesiastical councils held at Nice or Nicæa, in Asia Minor, in 325 and 787. The object of the first Council of Nice, which was convened by Constantine, was to settle the controversies which had arisen in regard to the doctrine of the Trinity. The session lasted about two months. A creed was adopted by the council in its later form known as the Nicene Creed (which see). The council of 787 was summoned by the Empress Irene, with the concurrence of the pope, and it decreed that images were to be used as aids to devotion.

Nicene Creed (nī'sēn krēd), a summary of Christian faith adopted by the Council of Nice against Arianism A.D. 325, altered and confirmed by the Council of Constantinople A.D. 381. Its characteristics are the insertion of the term 'of one substance with the Father,' directed against the Arian heresy; the insertion of the words 'and the Son'; and the omission of the clause 'He descended into Hell.' It is recited both in the Roman Catholic and in the Anglican Church liturgies.

Niche (nich), a recess in a wall for the reception of a statue, a vase, or of some other ornament.

Nichol (nik'ol), JOHN, son of Professor John P. Nichol, born at Montrose, Scotland, in 1833; educated at Glasgow and Oxford Universities. From 1861 to 1889 he was professor of English Literature in Glasgow University. Besides his contributions to the *Encyclopædia Britannica* and the *Westminster* and *North British Reviews*, etc., he published the following:—*Tables of European Literature and History* (1876); *Tables of Ancient Literature and History* (1877); *English Composition* (1879); *Byron* (1880); *The Death of Themistocles and other Poems* (1881); *American Literature* (1882); *Kant* (1889); etc. He died in 1894.

Nichol, JOHN PRINGLE, astronomer, born in 1804, at Brechin, Forfarshire; died in 1859. Licensed for the Scottish Church, he turned his attention to astronomy, and acquired so much reputation that in 1836 he was appointed professor of astronomy in Glasgow University. Among Dr. Nichol's literary works may be mentioned: *The Architecture of the Heavens* (1838); *Contemplations of the Solar System* (1838); *The Stellar Universe* (1848); and the *Planetary System* (1851). He likewise edited a *Cyclopædia of Physical Sciences*, published in 1857.

Nicholas I (nik'o-lās), NIKOLAI PAVLOVICH, Emperor of Russia, third son of the Emperor Paul I, was born in 1796; died in 1855. He ascended the throne in 1825. He made war with Persia in 1827-28; joined in the Treaty of London, which secured the independence of Greece; and was one of the allied monarchs who destroyed the Turkish fleet at Navarino in 1827. This affair led to war between Russia and Turkey, in which the latter was defeated, paid indemnity, and signed the treaty of peace at Adrianople in 1829. He suppressed the Polish insurrection which broke out in the following year with relentless severity. In 1848 Nicholas assisted Austria with an army corps in putting down the rising in Hungary. Early in 1852 began the Russian effort to take over the holy places and assume the protectorate of the Christians in Palestine. This led to the Crimean war, before the close of which Nicholas died from lung disease.

Nicholas II, Czar of Russia from 1894 to 1917, was born in 1868 and succeeded to the throne on the death of his father, Alexander III. Although the promoter of the Hague Conference, which had for its object the establishment of perpetual peace, he ruled his country with the absolutist policy of his father, believing unreservedly in the principle of autocracy; and penalties of death and banishment to Siberia were imposed on many thousands of his subjects. Among the leading events of his reign were the alliance of Russia with France, the building of the trans-Siberian railway, the extension of Russian dominion in Manchuria, the disastrous war with Japan, and the still more disastrous war with Germany, which occurred as the result of the Austro-Serbian dispute. (See *European War.*) In the midst of the war Nicholas was forced to abdicate, March 16, 1917. For a time he lived at Tsarskoe-Selo. Later he was transferred to Tobolsk, Siberia, and in May, 1918, to Yekaterinberg. A Russian government dispatch announced his execution on July 16, 1918, by the Ural Regional Council.

Nicias (nish'e-as), an Athenian statesman and general, who displayed much skill and activity in the time of the Peloponnesian war. He was put to death after the ill-success of his expedition to Sicily (B. C. 413).

Nickel (nik'el), a metallic element of silver-white color and great hardness, capable of taking a fine polish. It is magnetic at ordinary temperatures and very difficult to purify. When pure it is malleable and ductile. Its chemical symbol is Ni, atomic weight 58.7, specific gravity 8.90 in the solid state, melting point about 1450° Centigrade. Nickel is largely used in the manufacture of german silver (copper-zinc-nickel), nickel-steel and in electro-plating. Nickel-steel has a much higher resistance to corrosion than carbon steel, high resistance to stresses combined with great malleability and ease of working. It is largely used in the manufacture of armor plate and rails (3.5 per cent nickel) on account of its unequalled hardness and toughness, and in making structural steel. Nickel-steel, if it contains more than 36 per cent of nickel has the lowest coefficient of expansion known and is much used for scientific instruments on this account. The element was discovered by Cronstedt in 1751. Nickel is usually associated with cobalt, in garnierite, gersdorffite, millerite, niccolite, pentlandite, and certain other minerals widely distributed. The discovery of garnierite in New Caledonia, nickeliferous pyrrhotite in Sudbury, Ontario, Canada, and niccolite, smaltite and metallic silver at Cobalt, Canada, have made these localities the principal sources of nickel ores, the Sudbury district supplying about 90 per cent of the world's output.

Nickel-glance, a grayish-white, massive, and granular ore of nickel, consisting of 36.5 nickel, 45.2 arsenic and 19.3 sulphur.

Nickel-plating, is the process by which a coating of nickel is placed upon another metal, and the essentials of the process, as in electroplating, are a proper solution of the metal and an electric battery. See *Electrometallurgy.*

Nicobar Islands (nik-ō-bär'), a group situated in the Indian Ocean northwest of Sumatra; area, about 426 square miles. They are well wooded and yield cocoanuts and tropical fruits in abundance. The natives, who seem to be of the Malay race, are reported to be lazy, cowardly and treacherous. Cocoanuts are extensively exported, also edible nests, trepang, etc. The islands were occupied by Britain in 1869, and are governed along with the Andamans, the chief station being Nancowry, with a fine harbor. Pop. 6700.

Nicol (nik'ul), ERSKINE, painter, born in Leith, Scotland, in 1825; received his education in art at the Trustees' Academy, Edinburgh, resided some time in Ireland, where he received his peculiar bent as a delineator of Irish life and manners; settled in London (1862), and contributed regularly to the Royal Academy, of which he was elected an associate in 1866. Among his well-known pictures of Irish subjects are *Notice to Quit, Renewal of the Lease Refused, Bothered, Among the Old Masters* and *Interviewing the Member.*

Nicolaiev (nyē-kō-lā'yef, or NICOLAEF), one of the principal naval stations of Russia, on the Black Sea, in the government of Kherson and 36 miles northwest of the town of Kherson, at the confluence of the Ingul and Bug. It occupies a large space, is fortified and well built, with wide streets and a finely planted boulevard. It was founded in 1791, and since its connection with the Russian railway system its trade and importance have vastly increased. Pop. (1910) 103,500.

Nicolaitans (nik-u-lā'i-tans), a sect in the early Christian Church, so named from *Nicolas*, a deacon of the church of Jerusalem. They are characterized as inclining to licentious and pagan practices, Rev. ii, 6.

Nicolas (nik'o-las), ST., a town in Belgium, in East Flanders, 19 miles E. N. E. of Ghent, in one of the best cultivated and most populous districts in Europe. Its manufactures are cotton, woolen, linen, and silk goods, lace, etc. Pop. 31,080.

Nicolas, SIR NICHOLAS HARRIS, an English writer, son of a naval officer, born in 1799; died in 1848. He entered the navy; attained the rank of lieutenant; afterwards studied law, and was called to the bar in 1825. He wrote a number of valuable biographies for the Aldine edition of the poets, and among his many works are *Synopsis of the Peerage of England; The Chronology of History; History of the Orders of Knighthood of the British Empire; Despatches and Letters of Lord Nelson; Memoirs of Sir Christopher Hatton.*

Nicolay (nik'o-lā), JOHN GEORGE, author, born at Essingen, Bavaria, in 1832; died in 1901. He came to the United States, became a printer in Illinois and subsequently private secretary to President Lincoln. He was consul at Paris, 1865-69, and marshal of the Supreme Court, 1872-87. He wrote *The Outbreak of the Rebellion* and with John

Hay wrote *Abraham Lincoln: A History*, and edited Lincoln's complete works.

Nicole (nē-kol), PIERRE, a French writer, one of the so-called Port-royalists, born at Chartres in 1625; died in Paris in 1695. From the provinces he proceeded to Paris, where he studied theology; afterwards he entered Port Royal, where he was engaged in teaching and associated himself with Arnauld in the preparation of his work on logic. Besides this he translated *Pascal's Letters* into Latin, and wrote *Essais de Morale* and *Les Imaginaires et les Visionnaires*, the latter provoking a severe attack from Racine.

Nicomedia (nik-u-mē-di'a), an ancient city of Asia Minor. See *Ismid*.

Nicopoli (ni-kop'o-lē), a city of Bulgaria, on the Danube, with a strong citadel and other works. Pop. 5815.

Nicopolis (ni-kop'o-lis; 'City of Victory'), the name of many ancient cities. One of the most celebrated was in Epirus on the northern side of the Ambracian Gulf (Gulf of Arta), built by Augustus in commemoration of his naval victory over Antony at Actium.

Nicosia (nē-ko-zē'a), a town in the province of Catania, Sicily, 39 miles W. N. W. of the town of Catania, the see of a bishop. Pop. 16,441.

Nicosia, or LEFKOSIA, the capital of the Island of Cyprus, situated in the center of the island. Its lofty walls and bastions still present an imposing appearance, and it has a number of mosques and Greek churches, the residence of the High Commissioner, etc. It has manufactures of silk, cotton, leather. Pop. (1911) 16,052.

Nicot (nē-kō), JEAN, born in 1530; died in 1600; was French ambassador at the court of Portugal, where he was presented with some seeds of the tobacco plant, which he introduced into France about 1560. The botanical term for tobacco (*Nicotiana*) is derived from his name.

Nicotiana (nik-u-ti-a'na), the tobacco genus of plants. See *Tobacco*.

Nicotine (nik'u-tin), a volatile alkaloid base obtained from tobacco. It forms a colorless, clear, oily liquid, which has a strong odor of tobacco. It is highly poisonous, and combines with acids, forming acrid and pungent salts.

Nictitating Membrane (nik-ti-tā'ting), or 'THIRD EYELID,' a thin membrane by which the process of winking is performed in certain animals, and which covers and protects the eyes from dust or from too much light. It is chiefly found in birds and fishes, and is represented in a rudimentary condition in man, and higher mammals generally, by the 'semi-lunar folds' situated at the inner or nasal angle of the eye.

Niebelungenlied. See *Nibelungenlied*.

Niebuhr (nē'bōr), BARTHOLD GEORG, historian, born at Copenhagen, in 1776 (see next article); died at Bonn in 1831. He studied law at Göttingen, and philosophy at the University of Kiel; became, in 1796, private secretary to the Danish minister of finance, and soon after under-librarian in the royal library of Copenhagen; while in 1798 he visited England and attended the University of Edinburgh for one session. Niebuhr subsequently transferred his services to Prussia, and held various government offices. Having been appointed historiographer-royal he delivered lectures on Roman history in the University of Berlin, and in 1811 published them in two volumes. In 1816 he was appointed Prussian minister to the papal court at Rome and there he resided until 1822, chiefly occupied in historical research. At the latter date he returned to Bonn and became adjunct professor of ancient history at the university. Here he continued his *Roman History*, the third volume of which appeared after his death.

Niebuhr, KARSTENS, a German traveler, father of the above born in Hanover in 1733; died in 1815. In 1761 he joined the expedition sent by Frederick V. of Denmark, to explore Arabia. As the result of the expedition he published *Beschreibung von Arabien* and *Reisebeschreibung von Arabien und anderen umliegenden Ländern*.

Niehaus (nē'hous), CHARLES HENRY, was born of German parentage at Cincinnati, Ohio, 1855, and studied art in his native city and at Munich and Rome. He established himself in New York City in 1885, and became in 1906 a national academician. The list of his statues includes Garfield at Cincinnati, Lincoln, Farragut, and McKinley at Muskegon, Michigan, etc.

Niel (ni-el), ADOLPHE, a French marshal, born in 1802; died in 1869. He was educated at the Ecole Polytechnique, Paris, and the Military School, Metz; took part in the expedition against Constantine in Algeria; assisted as head of the staff of engineers at the siege of Rome in 1849 during the revolutionary movement under Garibaldi; commanded the engineers and planned the operations

against Sebastopol in 1854-55, distinguished himself in the Italian campaign of 1859, and was thereafter made a marshal of France by Napoleon III.

Niello (ni-el'ō), a method of ornamenting metal plates, much practiced in the middle ages, and which gave rise to copperplate engraving. The lines of a design were cut in the metal, and filled up with a black or colored composition, which gave effect to the intaglio drawing.

Nielson (nēl'sun), JULIA, actress, born at London in 1868; appeared on the stage in 1888. She toured Great Britain and the United States, her greatest success being as *Rosalind*, in *As You Like It*. She married Fred Terry, an actor.

Niemen (nyā'men), or MEMEL, a large river which rises in Russia, flows at first west through the government of Vilna and past the town of Grodno; then north, forming the boundary between Poland and the government of Vilna; then again west, separating Kovno and Poland; and finally enters East Prussia, passes Tilsit, and falls into the Kurisches Haff. It is 640 miles in length, and is navigable as far as Grodno, 400 miles.

Nietzsche (nēt'she), FRIEDRICH WILHELM, philosopher, born in Saxony, in 1844; died in 1900. He won distinction by works on the origin of tragedy, etc. In 1878 he began a long series of works in which he developed a revolutionary philosophy, denouncing religion and advocating the principle of a pitiless struggle for existence. He became insane and was confined in a hospital in 1895.

Nièvre (nyāvr), a department of Central France, bounded by Yonne, Cher, Allier, Saône-et-Loire, and Côte-d'Or; area, 2631 square miles. It receives its name from the Nièvre, a small tributary of the Loire. It is generally hilly, is only of indifferent fertility, produces some good wine, and has nearly a third of its surface covered with wood. Its minerals include iron and coal, and the chief manufactures are woolen cloths, linen, cutlery, etc. Pop. 313,972.

Niflheim (nif'l-him), in Scandinavian mythology, the region of endless cold and everlasting night, ruled over by Hela.

Nigella (nig-el'la), fennel flowers, a genus of annual plants, nat. order Ranunculaceæ.

Niger (nī'jēr), the name of a great river of Western Africa, which rises on the north side of the Kong Mountains, flows north and northeast, afterwards turns southeast and south until, by various channels, it enters the Gulf of Guinea, its total length being about 2600 miles. Throughout its course the river is known under various names, such as Joliba, Kworra (Quorra), Mayo, etc. Not much is known of the river until it reaches Sego, about 340 miles from its source; but here it enters upon a fertile tract of country which continues until Timbuctoo is reached. Large islands divide the river channel, and its tendency here is to spread over the flat country in a network of small streams. At the town of Burrum, where it trends in a curve to the southeast, the river is known as the Mayo until it reaches its confluence with the Benué, where it becomes known as the Kworra. At Aboh, about 100 miles from the sea, the great delta of the Niger begins. This delta extends along the coast for about 150 miles, and is intersected by a network of channels and islands, the principal navigable courses being the Nun, Bonny and Mari. Mungo Park was the first European who explored this river (1796-97).

Nigeria (ni-jer'i-a), a great region of Western Africa within the British sphere of influence, comprising the Niger delta, and a tract on both sides of the river more than 1000 miles from its mouth, as well as the valley of the Benué for a long distance. A great part of this tract was formerly administered by the Royal Niger Company, a British company chartered in 1886. In 1898 the French encroached on this territory and caused great danger of war between that country and Great Britain. Since 1900 it has been under government control. Its area is roughly estimated at 400,000 sq. miles and its pop. at 15,000,000. It comprises a large number of native states and extends from the Gulf of Guinea to 14° N. lat. and lies between 3° and 13° E. long. Much of it is heavily forested and yields important forest products.

Night-blindness, the medical term being *hemeralopia*, is a disease in which the eyes enjoy the faculty of seeing while the sun is above the horizon, but are incapable of seeing by the aid of artificial light.

Night-hawk, a species of the goat-sucker family (*Chordeiles Virginiānus*), a bird universally known in the United States, 9½ inches in length and 23 in extent of wing. It is a bird of strong and vigorous flight, and its prey consists of beetles and other large insects. Other American species are the 'chuck-will's widow' (*C. carolinensis*) and the 'whip-poor-will' (*C. vocif.*

ōrus), both of which, like the night-hawk, arrive in May, and leave the States in September.

Night-heron, a wading bird of several species belonging to the family Ardeidæ (herons and cranes). The species occur in Europe, Asia, Africa and America. The common night-heron is the *Nycticŏrax Gardeni* or *europæus*. It is about 20 inches in length, and has three long narrow feathers proceeding from the nape of the neck, and hanging backwards.

Nightingale (nī'tin-gāl), a well-known passerine bird (*Luscinia philomēla*) of the thrush family. The nightingale sings at night, and its famed chant is the love song of the male, which ceases when the female has hatched her brood. It is a native of many parts of Europe and Asia, and of the north of Africa. It is migratory, extending its summer migrations as far north as the south of Sweden. In England, where it appears about the middle of April, it is rather a local bird, some parts appearing to be quite unsuited to its habits; the northern counties are seldom visited, and in Scotland and Ireland it is unknown. It feeds on caterpillars and other larvæ, frequents hedges and thickets, and builds its nest on the ground or near it, laying four or five eggs of a blue color. The young are hatched in June, and are prepared to accompany their parents in their southward migration in August. It is solitary in its habits, and its coloring is very inconspicuous. Another species inhabits Southeastern Europe.

Nightingale (*Luscinia philomēla*).

Nightingale, Florence, daughter of William Shore Nightingale, Embly Park, Hampshire, was born at Florence in 1820. At an early age she manifested a keen interest in suffering humanity, and from philanthropic motives visited the chief military hospitals in Europe, and studied the chief nursing systems. During the Crimean war (1854) the hospital accommodation was found to be very defective, and Miss Nightingale promptly volunteered to organize a select band of nurses at Scutari. The offer was accepted by the War Office, and within a week Miss Nightingale was on her way to the East, where she rendered invaluable service to the sick and wounded by her incessant labors in nursing and hospital reform. The strain, both mental and physical, which this work demanded permanently injured her health; yet notwithstanding her confinement to a sick room, she continued to give her experience in the interest of hospital reform, and for this purpose she was consulted during the American Civil war and the Franco-German war. She published *Notes on Hospitals* (1859), *Notes on Nursing* (1806), *On the Sanitary State of the Army in India* (1863), *Notes on Lying-in Institutions* (1871), and *Life or Death in India* (1873). She died in 1910.

Night-jar, one of the British names of the common goatsucker.

Nightmare (nīt'mār), a state of oppression or feeling of suffocation which sometimes comes on during sleep, and is accompanied by a feeling of intense anxiety, fear, or horror, the sufferer feeling an enormous weight on his breast, and imagining that he is pursued by a phantom, monster, or wild beast, or threatened by some other danger from which he can make no exertion to escape. The sufferer wakens after a short time in a state of great terror, the body often covered with sweat. The proximate cause of nightmare is said to be irregularity of the circulation in the chest or brain, and the disorder is generally due to repletion and indigestion, but sometimes to the fact of the sufferer lying in an awkward position in bed.

Nightshade (nīt'shād), the English name of various species of plants, chiefly of the genus *Solānum* (to which the potato belongs). The woody nightshade or bittersweet (*S. Dulcamāra*) and common or garden nightshade (*S. nigrum*) are European plants, the first growing in hedges and among bushes, and the latter in gardens, fields, and waste places. The root and leaves of *S. Dulcamāra* are narcotic, and have been applied to various medicinal uses. The berries, if not absolutely poisonous, are suspicious. This plant has been introduced from Britain into the United States, and grows wild in many localities. *S. nigrum* is fetid and narcotic, and has also been employed medicinally. *Deadly nightshade* is *Atrŏpa Belladona*

(See *Belladonna.*) For *enchanter's nightshade*, see that article.

Nigrin (nig'rin), an ore of titanium, found in black grains or rolled pieces, containing about 14 per cent of iron. It occurs in Ceylon and Transylvania.

Nigritia. See *Soudan.*

Nihilism (nī'hil-izm), the name given to the early Russian form of revolutionary Socialism, and first used by Tourguenieff in his novel, *Fathers and Children.* It was at first opposed to methods of force and confined itself to spoken propaganda, but it grew into an organization that believed the overthrow of autocracy could only be achieved by assassination. Its first principle was an insistence upon absolute individualism; all forms of government were to be swept away, all class distinctions annihilated. Under Bakunin (*q. v.*) and Herzen (*q. v.*) the movement acquired great strength, and Russian students began to proclaim the new gospel of individualism, or its more moderate form, the return to the *mir*, or village commune, freed from control by the state.

About 1874 the Russian government began to interfere, the newspapers which advocated the Nihilist doctrine were suppressed, foreign pamphlets seized, and large groups of the revolutionists summarily tried and condemned to death and exile. Hitherto the Nihilists had spread their principles by peaceful means, but after the trial in 1877, in which 99 persons were sent to Siberia, a secret and sanguinary struggle between armed assassins and the government began. The first startling indication of the new departure was the murder of General Trepoff by a young woman named Vera Sassulitch, and this was followed by the assassination of Generals Mezentzoff and Drentein, Prince Krapotkin, Governor of Kharkov, and Commander Heyking. The incendiary followed the assassin. In June, 1879, no fewer than 3500 fires broke out in Petrograd and other large towns, most of which were attributed to the Nihilists. Various attempts were made to assassinate the emperor. Four shots were fired at him by Solovieff, a train in which he was supposed to travel was wrecked by Hartmann, an apartment in the Winter Palace in Petrograd was blown up, and at last, in March, 1881, Alexander II was murdered by a bomb thrown beneath his carriage in the street near the palace. Nihilism became absorbed in the more moderate revolutionary parties and was not in evidence in 1917 when the almost bloodless revolution ousted Czar Nicholas.

Niigata (nē-i-gä'tä), the chief town of the province of Echigo, Japan, situated on the west coast of the island of Hondo and on the left bank of the Shinano. This port was opened to foreign trade by the treaty of 1860; but the obstructed state of the river, the open anchorage, and the severe winter has hitherto prevented the development of much trade. The town is well built, the streets are traversed by canals, there is a hospital and a college, and considerable coasting trade. Pop. (1913) 61,833.

Nijkerk (nī'kerk), a town of Holland, province Gelderland, near the Zuider Zee, with which it communicates by canal. Pop. 8124.

Nijmegen (nī'mā-ghen), NYMEGEN, or NIMEGUEN (nim'e-gen), a city in the Dutch province of Gelderland, delightfully situated on the slopes of several hills, reaching down to the Waal. It has a fine old church (St. Stephen's), and a Renaissance town hall of the sixteenth century. The industrial occupations include tanning, brewing, metal goods, cotton manufactures, etc. The town is celebrated for the treaty of peace concluded in 1678 between France and Holland and Spain, and for that of 1679 between the German Empire, France and Sweden. It was formerly a strong fortress, but the fortifications have been recently abolished. Pop. (1914) 56,635.

Nijni-Novgorod (n i z h' n ē nov'go-rod), a town in Russia, capital of government of same name, at the confluence of the Oka and Volga, 255 miles east of Moscow. The town forms three parts: the upper district, including the citadel; the lower portion, called the Nijni Bazaar; and the suburb, occupied by the great annual fair, and containing 6500 booths, besides other structures for its accommodation. This fair, begun in 1816, is held annually between July 15 and September 1, O.S. Here there are gathered together an immense multitude of people (say 250,000) from all parts of Russia and many parts of Asia, and the annual value of the merchandise sold is estimated at about $150,000,000. The chief products sold are cotton, woolen, and linen goods, tea, silk and silk goods, metal wares, furs, leather, porcelain, eathernware and glass, coffee, wine. Pop. 108,820.—The province has an area of 19,704 square miles. The surface forms an extensive plain, occasionally broken and diversified by low undulating hills. It is drained by the Volga. The soil is poor, and the crops, chiefly hemp and flax, not very abundant. A large

part is covered with forests. Pop. 1,600,304.

Nijni-Tagilsk (n i zh-nē-tä-gilsk'), a town of Russia amid the Ural Mountains, in the government of Perm, and 150 miles east of the town of Perm, in the midst of a district very rich in minerals. Pop. about 30,000.

Nikē (nī'kē), in Greek mythology, the goddess of victory. She was rewarded by Zeus with the permission to live in Olympus, for the readiness with which she came to his assistance in the war with the Titans. There is a temple to her on the Acropolis of Athens still in excellent preservation.

Nikolaef. See *Nicolaiev.*

Nikolayevsk (n y ē - k ä -lä'yefsk), a town of Russia, gov. of Samara, on the Igris, a tributary of the Volga. Pop. 8200.

Nikolsburg (ni'kolz-börg), or NIKLASBURG, a town of Austria, in Moravia, 27 miles south of Brünn. There are linen and woolen manufactures and some trade. Pop. 8091.

Nikopol (nē-ko'pōl), a town of Southern Russia, government of Ekaterinoslav, on the Dnieper. Pop. 21,282.

Nile (nīl), a great historic river in Africa, the main stream of which, known as the *Bahr-el-Abiad*, or White Nile, has its chief source in the equatorial lake Victoria Nyanza. What is known as the *Bahr-el-Azrek*, or Blue Nile, a much smaller stream, joins the White Nile at Khartoom, lat. 15° 40′ N. The source of the Blue Nile was discovered in the Abyssinian Highlands by Bruce in 1770, while the source of the other, or true Nile, was for long the subject of speculation and exploration. The discoveries, however, of Speke and Grant in 1861-62, of Sir Samuel Baker in 1863-64, and of subsequent explorers, have established the fact that the head waters of the Nile are collected by a great lake situated on the equator, called Ukerewe, or Victoria Nyanza. The Nile, near where it flows out of Lake Victoria, forms the Ripon Falls, then flows generally northwest; about lat. 1° 40′ N. it expands into Lake Ibrahim Pasha, afterwards forms the Falls of Karuma and the Murchison Falls, and then enters another lake, the Albert Nyanza, at an elevation of about 2550 feet. This lake, as was discovered by Henry M. Stanley, receives the waters of another lake further to the southwest, Lake Muta Nzige, or Albert Edward, the channel of communication being the river Semliki. From the Albert Nyanza to the Mediterranean the general course of the Nile is in a northerly direction, with numerous windings. Above Gondokoro, about lat. 5° N., the river forms a series of cataracts; but between these falls and the Albert Nyanza, a distance of 164 miles, the river is broad, deep and navigable. Not far below Gondokoro the Nile begins to flow more to the west till it reaches lat. 9° N., where it receives the Bahr-el-Ghazal, one of its chief tributaries. On receiving this affluent it turns due east for about 100 miles, and then after receiving the Sobat from the southeast flows almost due north to Khartoom. It receives its last tributary, the Atbara, from the Abyssinian frontier, for the rest of its course (some 1500 miles) being fed by no contributory stream. Between this point and the frontiers of Egypt occur several rapids or cataracts presenting greater or less obstacles to navigation, there being also another cataract some distance below Khartoom. In Egypt, at the head of the Delta near Cairo, it divides into two main branches, leading down respectively to Rosetta and Damietta, where they enter the Mediterranean. As rain scarcely falls in the greater part of the valley of the Nile the river owes its supplies to the copious rains and the vast lake areas of the tropical regions in which it takes its rise, and its volume thus depends upon the season. It begins to increase in June, attains its greatest height about September, and then subsides as gradually as it rose. (See *Egypt.*) The ordinary rise at Cairo is about 40 feet. During the flood a great portion of the Delta, and of the valley of Egypt higher up, is inundated. This annual inundation, with all the bounty which it brings, is watched and waited eagerly, and no doubt it was from this character of benefactor that the Nile has been worshiped as a god alike by Egyptians, Greeks and Romans. Its length is estimated at nearly 4200 miles, or rather less than that of the Mississippi-Missouri. Its usefulness in irrigation has been greatly increased under British influence by large dams, the barrage at Assuit, and the colossal dam at Assuan, which is estimated to have a holding power of 87,500,000,000 cubic feet, capable of irrigating hundreds of thousands of acres.

Nile, BATTLE OF THE. See *Aboukir.*

Niles, a city of Trumbull Co., Ohio, on the Mahoning River, 55 miles E. S. E. of Cleveland on three trunk railroads. Produces sheet metal, sheet-metal products, trolley cars, printing presses, electric bulbs, etc. Pop. 10,000.

Niles, a city of Berrien Co., Michigan, on the St. Joseph's River, 112 miles s. w. of Lansing. It has varied industries, and ships large quantities of fruit and live stock. Pop. 5156.

Nilgiri Hills. See *Neilgherry Hills.*

Nilometer (nī-lom'e-tẽr), an instrument for measuring the rise of water in the Nile during its periodical floods. The nilometer in the island of Rhoda (Er-Rôdah), opposite to Cairo, consists of a slender graduated pillar standing in a well which communicates with the river. The pillar is divided into 24 cubits, each of which measures 21.4 inches. When the inundation reaches the height of 21 cubits it is considered adequate.

Nilsson (nil'son), CHRISTINE, born at Hassaby, near Wexib, in Sweden in 1843. Accompanied by her brother she used to sing at village fairs and places of public resort, where she also played on the violin. In 1857 her talent attracted the attention of a wealthy gentleman, who had her educated as a singer at Stockholm, and afterwards at Paris. In 1864 she made her first appearance as *Violetta* in *La Traviata* at the Théâtre Lyrique, Paris, and she appeared in 1867 for the first time at Her Majesty's Theater, London. On several occasions she visited America with the utmost success. Among her most famous impersonations are *Ophelia* in Thomas' *Hamlet,* and *Marguerite* in Gounod's *Faust.* In 1872 she married M. Auguste Rouzaud, who died in 1882; in 1886 she married Count A. de Miranda.

Nimbus. See *Cloud.*

Nimbus (nim'bus), a term applied in art, especially in sacred art, to a kind of halo or disc surrounding the head in representations of divine or sacred personages; as also to a disc or circle sometimes depicted round the heads of emperors and other great men. The nimbus in representations of God the Father is of a triangular form, with rays diverging from it all round, or in the form shown in the cut; the nimbus in representations of Christ contains a cross more or less enriched; that of the Virgin Mary consists of a circlet of small stars, and that of angels and saints is a circle of small rays. When the nimbus is depicted of a square form it indicates that the person was alive at the time of delineation. Nimbus is very frequently confounded with *aureola* and *glory.*

Nimeguen. See *Nijmegen.*

Nîmes, or NISMES (nēm), a city of Southern France, capital of the department of Gard, 62 miles northwest of Marseilles. It is an episcopal see, and consists of an old central quarter surrounded by handsome boulevards, beyond which are the modern quarters. Its manufactures are chiefly of silk and cotton goods; it has a considerable commerce, and is the great entrepot of Southern France for raw silk. Among

The Nimbus as variously represented in Sacred and Legendary Art.—1, God the Father. 2 and 3, Christ. 4, Charlemagne. 5, Emperor Henry II.

the buildings are the cathedral, the church of St. Perpetua, the Palais de Justice, etc.; but Nîmes is chiefly remarkable for its Roman remains, including an ancient temple, with thirty beautiful Corinthian columns, now serving as a museum and known as the *Maison Carrée;* the amphitheater, a circus capable of seating 20,000 persons; the temple of Diana; the ancient Tour Magne, on a hill outside of the city, supposed to have been a mausoleum; and a Roman gateway. Nîmes (anc. *Neumausus*) is supposed to have been built by a Greek colony, and was afterwards for about 500 years in the possession of the Romans. In the sixteenth century it became a stronghold of Calvinism, and suffered much during the civil wars, as also by the revocation of the Edict of Nantes, and during the revolution; but latterly it is a busy manufacturing center. Pop. (1911) 80,437.

Nimrod (nim'rod), described in Gen. x, 8 to 12, as a descendant of Ham, a son of Cush, a mighty hunter before the Lord, and the beginning of

whose kingdom was Babel, Erech, Accad and Calneh in the land of Shinar.

Nimrûd (nim'rud), the name given to the site of an ancient Assyrian city situated in the angle formed by the rivers Tigris and Zab, and about 18 miles below Mosul. It is one of the group of great cities which clustered round Nineveh, the capital, and it has been supposed, from inscriptions found in the ruins, that it is identical with the Calah mentioned in Genesis x. See *Nineveh.*

Nine-pins, a game with nine pins or pieces of wood set on end, at which a ball is rolled for throwing them down. It has been replaced in the United States by a game called *Ten-pins.*

Nineveh (nin'ē-ve), an ancient ruined city, formerly capital of the Assyrian Empire, in Asiatic Turkey, and in the pashalic of Mosul, on the left bank of the Tigris, along which, and opposite to the town of Mosul, it occupied an extended site. The first recorded notice of Nineveh is in Genesis x. Again it is spoken of in the book of Jonah as a 'great city.' It remained the capital of Assyria till about 606 B.C., when it was taken and burned by the Babylonian Nabopolassar and the Median Cyaxares. It was maintained as a local tradition that this ancient capital of Assyria lay buried on the left bank of the Tigris opposite Mosul; but the fact was not definitely settled until in 1841 M. Botta began excavations in the vast mounds which there existed. He was followed in this by Mr. (afterwards Sir Henry) Layard, who explored a great portion of the large angle formed by the Tigris and the Zab. In the mounds of Koyunjik, opposite Mosul, he excavated the palaces of Sennacherib, Assurbanipal and Esarhaddon. The walls of the city, which the inscriptions describe as Ninua, stretch along the Tigris for 2½ miles, and the elaborate outworks, [illegible] nd defenses can still be traced. [illegible] portant discoveries made by Layard were continued by Loftus, Hormuzd Rassam and G. Smith, and the result of their labors deposited in the British Museum. See *Assyria.*

Ningpo (ning'pō'), a large city of China, in the province of Chekiang, one of the ports open to foreign commerce, on a plain on the left bank of the Takia or Ning-po River, about 16 miles from its mouth. It is surrounded by a wall 25 feet high, 15 feet wide, and 5 miles in circuit, and its most remarkable edifice is the great Ning-po pagoda, 160 feet in height, and now partly in ruins. The manufactures consist chiefly of silk and cotton goods, carpets, furniture, etc. The principal exports are tea, silk, and raw cotton; and the principal imports sugar and opium. Pop. est. from 400,000 to 500,000.

Ninian (nin'yan), St., a missionary preacher who spread Christianity among the Picts in the beginning of the fourth century. He was ordained bishop of the Southern Picts by Pope Siricius in 394. Ninian selected Candida Casa, or Whithorn (Wigtownshire), as his chief seat, but prosecuted his labors in all parts of Southern Scotland, and even as far north as the Grampians. He died in 432. His festival is September 16.

Ninon de L'Enclos. See *L'Enclos.*

Ninus (nī'nus), the fabulous founder of the Assyrian Empire, and of its capital, Nineveh. He is said to have married the similarly fabulous Semiramis, by whom he was afterwards murdered.

Niobē (nī'o-bē), in Greek mythology, the daughter of Tantalus, married to Amphion, king of Thebes. Proud of her numerous progeny, she provoked the anger of Apollo and Artemis (Diana), by boasting over their mother Leto (Latona), who had no other children but those two. She was punished by having all her children put to death by those two deities. She herself was metamorphosed by Zeus (Jupiter) into a stone which shed tears during the summer. This fable has afforded a subject for art, and has given rise to the beautiful group in the tribune at Florence, known by the name of Niobē and her Children.

Niobium (nī-ō'bi-um), or COLUMBIUM, a rare metal discovered in 1801, in a black mineral called columbite from North America. It forms a black powder insoluble in nitric acid, but readily soluble in a mixture of nitric and hydrofluoric acids. Symbol Nb. Atomic weight 98.

Niort (nī-ōr), a town in Western France, capital of the department of Deux-Sèvres, on two hills washed by the Sèvre-Niortaise, 79 miles southeast of Nantes. Its town house and old castle are interesting buildings. The staple manufactures are leather and gloves, and the trade, particularly in claret, is extensive. Pop. (1911) 23,775.

Nipa (nē'pa), a genus of palms of which there is but one species, *N. fruticans*, a native of the East Indies, Philippines, etc., growing on marshy coasts. It has no stem, fronds about 20 feet long, and edible fruits. The fronds

are used by the natives for a variety of purposes.

Niphon, or NIPON. See *Japan.*

Nipigon (nip'i-gon), or NEP'IGON, a lake of Canada, in Ontario, about 30 miles northwest of Lake Superior. It is about 70 miles long and 40 miles broad, with rugged headlands, deep bays, and many islands. It is connected with Lake Superior by the Nipigon river.

Nipissing (nip'i-sing), LAKE, a lake of Canada, in Ontario, N. E. of Lake Huron, irregular in coast line; breadth, about 30 miles; length, 48 miles. It contains many islands, its outlet being by French River into Lake Huron.

Nipple. See *Mammary Glands.*

Nipplewort (nip'l-wurt), a plant of the genus *Lapsăna* (*L. communis*), nat. order Compositæ, growing commonly as a weed by the sides of ditches and in waste places.

Nirva'na. See *Buddhism.*

Nisami (ne-zâ'mē), full name ABU MOHAMMED BEN JUSUF SHEIKH NISÂM-ED-DIN, one of the great poets of Persia, and the founder of the romantic epic, born about 1100, was a special favorite of the Seljuk princes, who then ruled in Persia; died in 1180. Besides a *Divan*, or collection of lyrics, he wrote five larger poems, which have been extensively circulated in Persia and India.

Nisan (nī'zan), a month of the Jewish calendar, the first month of the sacred year and seventh of the civil year, answering nearly to our March. It was originally called Abib, but began to be called Nisan after the captivity.

Nish (nēsh), or NISSA (nis'sa), a fortified town in Servia, on the Nishava, 130 miles S. E. of Belgrade. It is the seat of a Greek bishop, and has celebrated hot springs and baths. It was the native place of the Emperor Constantine the Great. Pop. (1900) 24,451.

Nishapur (nesh'ä-pōr), an ancient city in Persia, province of Khorasan, 50 miles west by south of Mushed. Turquoises of excellent quality have long been found in its vicinity. Omar Khayyam was born here in 1123. Pop. about 15,000.

Nisibis (nis'i-bis), anciently a famous town in Mesopotamia, on the river Mygdonius. It is now called Nisibin, and is a small ruinous place.

Nisi prius (nī'si prī'us), a phrase in English law meaning 'unless before,' and occurring originally in a writ by which the sheriff of a county was commanded to bring the men impaneled as jurors in a civil action to the court at Westminster on a certain day, 'unless before' that day the justices came thither (that is, to the county in question) to hold the assizes, which they were always sure to do. The judges of assize, by virtue of their commission of *nisi prius*, try the civil causes thus appointed in their several circuits, being said to sit at *nisi prius*, and the courts in which these actions are tried being called courts of *nisi prius*, or *nisi prius* courts. A trial at *nisi prius* may be defined in general as a trial, before a judge and jury, of a civil action which has been brought in one of the superior courts. The phrase has been introduced, with the same meaning, in the United States courts.

Nitrate (nī'trāt), a salt of nitric acid. The nitrates are generally soluble in water, and easily decomposed by heat. Deposits of nitrates are present in small quantities in almost all soils, but enormous accumulations exist in Chile and Peru, though they are being rapidly exhausted. These latter deposits, which are known as Chile saltpeter, cubic niter, or nitrate of soda, are found near the coast, and were probably developed from remains of marine animals and birds. The great value of this nitrate is in its application to agriculture as a fertilizer on impoverished soil; for it is now well known that crops require large quantities of nitrogen to secure their full development. It has been found by experiment, for instance, that with a soil poor in nitrogen the crop of wheat per acre was 2090 lbs., whereas when the same soil was dressed with nitrogenous manure the return was 6982 lbs. So also with potatoes, the poor soil yielded 4452 lbs. as compared with 17,192 lbs. when dressed with nitrate. The nitrates, of which nitrate of soda is now considered the best, should not be used on light porous soils where the rain will sink the manure below the range of the roots. They make an excellent dressing in the spring, especially for root crops. See also *Cubic Niter.*

Nitrate of Silver, a substance obtained by cooling, in the shape of tabular crystals, from the solution produced when silver is oxidized and dissolved by nitric acid diluted with two or three times its weight of water. When fused the nitrate is of a black color, and it may be cast into small sticks in a mold; these sticks form the *lunar caustic* employed by surgeons as a cautery. It is sometimes employed for giving a black color to the hair, and is

the basis of the indelible ink for marking linen. Its solution is always kept in the laboratory as a test for chlorine and hydrochloric acid.

Nitrate of Soda, a salt analogous in its chemical properties to nitrate of potash or niter. It is largely used as a manure, and as a source of nitric acid and niter. See *Nitrate.*

Niter (nī'tẽr) (KNO_3), a salt, called also saltpeter, and in the nomenclature of chemistry nitrate of potassium or potassic nitrate. It is produced by the action of microbes in soils containing potash and nitrogenous organic matters, and forms an efflorescence upon the surface in several parts of the world, and especially in the East Indies, whence much niter is derived. In some parts of Europe it is prepared artificially from a mixture of common mold or porous calcareous earth with animal and vegetable remains containing nitrogen. It is also manufactured on a large scale by crystallization from a hot solution of chloride of potassium and nitrate of soda. It is a colorless salt with a saline taste, and crystallizes in six-sided prisms. It is employed in chemistry as an oxidizing agent and in the formation of nitric acid. Its chief use in the arts is in the making of gunpowder. It also enters into the composition of fluxes, and is extensively employed in metallurgy; it is used in the art of dyeing, and is much employed in the preservation of meat and animal matters in general. In medicine it is prescribed as cooling, febrifuge and diuretic. —*Cubic niter.* See *Nitrate.*

Nitric Acid (nī'trik), (HNO_3), the most important of the five compounds formed by oxygen with nitrogen. When pure it is a colorless liquid, very strong and disagreeable to the smell, and so acrid that it cannot be safely tasted without being much diluted. It is known in the arts as *aqua fortis,* and is commonly obtained by distilling niter (potassium nitrate) or Chile saltpeter (sodium nitrate) with strong sulphuric acid. Nitric acid contains about 76 per cent. of oxygen, a great part of which it readily gives up to other substances, acting thus as a powerful oxidizer. Thus many metals—such as copper, tin, silver, etc.—when brought into contact with this acid are oxidized at the expense of the acid with the production of lower oxides of nitrogen and an oxygenated metallic salt. Nitric acid, when moderately dilute, acts on organic bodies so as to produce a series of most useful substances, notably acetic, oxalic and picric acids, isatin or white indigo, etc. When strong acid is used, nitro-compounds oftentimes result, containing the group NO_2 in place of part of the hydrogen of the original substance; thus we get *nitrophenol, nitrobenzol,* etc. By replacement of the hydrogen in nitric acid a series of salts termed *nitrates* is obtained. (See *Nitrate.*) When nitrates are heated with combustible bodies an explosion is generally produced. A mixture of strong hydrochloric and nitric acids is known as *aqua regia, nitromuriatic,* or *nitrohydrochloric acid.* Nitric acid is employed in etching on steel or copper; as a solvent of tin to form with that metal a mordant for some of the finest dyes; in metallurgy and assaying; also in medicine, in a diluted state, as a tonic and as a substitute for mercurial preparations in syphilis and affections of the liver; and also in form of vapor to destroy contagion.

Nitrides (nī'trīds), a general designation for the compounds of nitrogen with other elements or radicles, but more especially for those compounds which nitrogen forms with phosphorus, boron, silicon and the metals.

Nitrification (nī-tri-fī-kā'shun), the conversion of nitrogenous organic matter or compounds of ammonia into nitrates, thus bringing them into a condition suitable for plant assimilation. Aside from this chemical method of nitrification, there is abundant reason to believe that the nitrogen of the air directly undergoes a similar change, especially in view of the fact that plants take up more nitrogen than the soil seems capable of furnishing. Recent research has shown that nitrogen may be fixed in the soil by the action of certain micro-organisms which occur in considerable variety and in great abundance, and which also occur as parasites on the roots of leguminous plants. For this reason the growth of plants of this family—peas, clover, alfalfa, etc., enrich instead of depleting the soil. Various methods are now employed by the aid of electric power to produce nitrates fitted for plant food and with a promising cheapness. Also nitrifying bacteria are cultivated in great numbers and supplied to farmers in condition to sow in the soil. These methods are very promising for the future of agriculture.

Nitrites. See *Nitrogen.*

Nitro-benzol ($C_6H_5NO_2$), a liquid prepared by adding benzol drop by drop to fuming nitric acid. It closely resembles oil of bitter almonds in flavor, and is largely employed as a substitute for that oil in the manufacture

of confectionery and in the preparation of perfumery. It is important as a source of aniline.

Nitro-compounds, compounds of carbon which are formed from others by the substitution of the monatomic radicle NO_2 for hydrogen.

Nitrogen (nī'tru-gen), an important elementary principle, the basis of nitric acid and the principal ingredient of atmospheric air. Its symbol is N, its equivalent 14, and its specific gravity 0.9713. It is a colorless, invisible gas, called by Lavoisier *azote* (Greek, *a*, privative, *zōē*, life), because it is incapable of supporting life. The name nitrogen was applied to it by Chaptal, because of its entering into the composition of niter, nitric acid, etc. The atmosphere contains about four-fifths of its volume of nitrogen, the rest being principally oxygen; niter contains nearly 13 per cent., and nitric acid about 22 per cent. by weight of this substance. Nitrogen is inodorous, tasteless, incombustible, and a very inert substance in itself, although many of its compounds, such as nitric acid and ammonia, are possessed of great chemical activity. By reason of its inertness and general slowness of chemical action it acts the part of a diluent of oxygen in the atmosphere. Having no marked action of its own on living beings, its admixture with the oxygen of the air serves to moderate the otherwise too violent action of the latter gas. Under certain circumstances nitrogen may be induced to combine with other elements, especially with hydrogen, oxygen, and carbon, with titanium, tantalum and tungsten. Nitrogen is allied in many of its chemical properties to the other elementary substances—phosphorus, arsenic, antimony and bismuth; and it has the power of combining with one, three, or five atoms of a monovalent element or radicle. The oxides of nitrogen are five in number. The first oxide of nitrogen (nitrogen *monoxide*) contains 28 parts by weight of nitrogen united with 16 parts by weight of oxygen; its chemical formula is N_2O. The next oxide (*dioxide*) contains 28 parts by weight of nitrogen united with 32 parts by weight of oxygen; its formula is N_2O_2. In the third oxide (*trioxide*) 28 parts of nitrogen is united with 48 parts of oxygen, and to it the formula N_2O_3 is assigned; while the fourth and fifth oxides (*tetroxide*, *pentoxide*) contain respectively 64 and 80 parts of oxygen, united in each case with 28 of nitrogen; to these the formulæ N_2O_4 and N_2O_5 are given. These oxides may be all produced from nitric acid. The *trioxide* forms a dark-blue liquid, which, when added to water at 0°, combines therewith, forming *nitrous acid*, HNO_2. This solution acts as a reducing agent, inasmuch as it eliminates gold and mercury as metals from several of their salts; on the other hand, it also exercises an oxidizing action on such salts as ferrous sulphate, potassium iodide, etc. By replacement of the hydrogen in nitrous acid a series of metallic salts is obtained, called *nitrites*. Nitrogen monoxide is better known by the name of 'laughing gas,' from the peculiarly exhilarating effect which it produces when breathed along with a little air. If the gas be pure, its inspiration soon brings about total insensibility, which does not continue long, and generally produces no bad effects upon the person who breathes it; hence it is much used as an anæsthetic in minor surgical operations, such as teeth drawing, etc.

Nitro-glycerine (nī'trō glis'ēr-in), an explosive substance appearing as a colorless or yellowish oily liquid, heavier than and insoluble in water, but dissolved by alcohol, ether, etc. It may be prepared by adding to 350 parts by weight of glycerine 2800 parts by weight of a cooled mixture of 3 parts of sulphuric acid of 1.845 specific gravity and 1 part of fuming nitric acid. The liquid is poured into ten or twenty times its bulk of cold water, when the heavy nitro-glycerine sinks to the bottom. When violently struck nitro-glycerine explodes, being resolved into water, carbonic acid, nitrogen oxides, and nitrogen. The volume of gas produced is about 10,000 times the initial volume of the nitro-glycerine. Explosion can also be effected by heating to about 500° F. one portion of a mass, whereby a partial decomposition is produced which almost immediately propagates itself throughout the liquid. The explosive force of nitro-glycerine compared with that of an equal volume of gunpowder is as 13:1. If any traces of acid be allowed to remain in nitro-glycerine it is liable to undergo spontaneous explosion; hence it is an exceedingly dangerous article to transport or store under such conditions. It is advisable to prepare the substance on the spot where it is to be used, and only in such quantities as may be required for immediate consumption. This method is adopted in many quarries and engineering undertakings, especially in America. Nitro-glycerine is largely used in the form of *dynamite*, to produce which it is mixed with some light absorbent substance. Thus treated it becomes much less dangerous. See *Dynamite*.

Nitromuriatic Acid. See *Nitric Acid.*

Nitron (nī'tron), radium emanation. This name was given to the emanation by Sir William Ramsay and Dr. Gray, who regard it as a new gaseous element.

Nitrous Acid. See *Nitrogen.*

Nitrous Oxide. See *Nitrogen.*

Niuchwang. See *Newchwang.*

Nivelles (ni-vell; Flemish, *Nyvel*), a town of Belgium, province of Brabant, on the Thines, 18 miles south of Brussels, which has manufactures of woolen, cotton, linen and paper, as well as railway locomotive and car works. The church of St. Gertrude is an edifice in the Romanesque style. Pop. 12,109.

Nivernais (ni-ver-nā), formerly one of the provinces of France, corresponding nearly to the present department of Nièvre.

Nivose (nē-vōz; literally 'snow month'), the name given in the French revolutionary calendar to a winter month beginning December 21 and ending January 19.

Nix, or NIXIE, in German popular mythology, the name of water spirits (male and female), haunting rivers, brooks, ponds and lakes. The male nixie is sometimes represented as old, sometimes as young, but generally as a malicious being. The female nixie appears as a blooming maiden, who often falls in love with some young man, whom she entices or draws into the water.

Nixdorf (niks'dorf), a town in northern Bohemia, with manufactures of cutlery, tools, and other steel wares, fancy goods, etc. Pop. 7109.

Nizam (ni-zam'). in the East Indies, the title of the ruler of Hyderabad in the Deccan, derived from *Nizam-ul-mulk*, governor or regulator of th State, a name adopted by Azof Jah in 1719, and since that time adopted by his successors.

Nizam's Dominions. See *Hyderabad.*

Nizza. See *Nice.*

Noah (nō'a), one of the patriarchs of the Old Testament, son of Lamech, is described in the book of Genesis as being chosen by God for his piety to be the father of the new race of men which should people the earth after the deluge. Having been warned by God of the coming flood, he built a vessel (the *ark*) by His direction, and entered it with his family and all kinds of animals. (See *Deluge.*) After the waters had subsided the ark rested on Mount Ararat, where Noah offered a thank-offering to God, and was assured that the earth should never again be destroyed by a flood, as a sign whereof God set the rainbow in the clouds. Noah is said to have died at the age of 950 years, 350 years after the flood. While modern accounts place Mount Ararat in Armenia, older traditions locate it in the mountains of the Kurds, east of the Tigris.

Nobel (nō'bel), ALFRED, a Swedish inventor, born at Stockholm in 1833; died in 1896. His father was a manufacturer of nitro-glycerine, by experimenting with which the son discovered the art of making dynamite (*q. v.*). He also invented smokeless powder and several kinds of blasting powder. His inventions brought him great wealth, and by will he left a sum of over $9,000,000, the income of which was to be divided into five parts and annually awarded for the most important discoveries in physics, chemistry, and physiology or medicine; for the most remarkable idealistic literary work, and for the greatest service rendered to the cause of peace during the year. The annual distribution of these prizes among those most distinguished in these fields of effort has become an important event. Each prize amounts to about $40,000. Up till 1914, when the great war began, not a single German had gained the Nobel peace prize. Prizes were awarded two Americans (Roosevelt and Root), three Swiss, two Austrians, two Belgians, and one each from England, France, Denmark, Holland, and other countries exclusive of Germany. In literature, four prizes went to Germans, two to Frenchmen, and one each to writers from Norway, Spain, Poland, Italy, England, Sweden, Belgium, and Bengal. In medicine, again four prizes were awarded to Germans. Frenchmen gained three, and one each was awarded to America, Denmark, Russia, Spain. Switzerland, Sweden. In chemistry, six prizes went to Germany, four to France, two to England, one to Sweden, one to Switzerland, and none to America. In physics, four prizes went to Germany, three to the Netherlands, two to France, two to England, one to America, one to Sweden, and one to Italy.

Nobert's Test-plates, finely-ruled glass plates so named from F. Nobert, a German optician, used for testing the power of microscopes. The rulings are executed on the under surface of a piece of exceedingly thin glass by means of a diamond

point. Some of these ruled plates have the almost incredible number of 225,187 spaces to the inch.

Nobility (nō-bil'i-ti), a rank or class of society which possesses hereditary honors and privileges above the rest of the citizens. Such a class is found in the infancy of almost every nation. Its origin may be attributed to military supremacy; to the honors paid to superior ability, or to the guardians of the mysteries of religion. Among the ancient Romans the patricians originally formed the nobility; but a new order of nobility arose out of the plebeians, consisting of those who had held curule magistracies and their descendants, enjoying the right of having images of their distinguished ancestors. Among the ancient German tribes only obscure traces of hereditary nobility are found. The dignities of the counts of the Franks, the aldermen and great *thanes* of England, as also of the *jarls* (in England *eorlas*) of Denmark, were accessible to every one distinguished by merit and favored by fortune. In Venice a civic nobility grew up consisting of a series of families who gradually acquired all political power and kept it to themselves and their descendants. In England hereditary nobility, the nobility belonging to the titles of duke, marquis, earl, viscount and baron, is now entirely personal, though formerly, as a result of the Norman conquest, it was connected with the holding of lands. In Spain and Italy the same rank depends in greater measure upon property; and in France and Germany the *de* and *von* of titles points to the same fact. In France and Germany nobility is common to all the members of the noble family, and the German nobility form a very exclusive caste. In France and Germany the nobles long formed a class of petty sovereigns within their own domains. The French revolution first deprived the nobles of that country of their privileges and exclusive rights, as that of jurisdiction, etc.; and the decree of June 19, 1790, abolished hereditary rank entirely. Under Napoleon I arose a new hereditary nobility, with the titles of princes, dukes, counts, barons and chevaliers, which descended to the eldest son. After the restoration of the Bourbons (1814) the ancient nobility reclaimed their former rights and privileges. Nobility was again abolished in 1848, but was restored by Napoleon III. In Norway the parliament abolished nobility by the three successive decrees of 1815, 1818 and 1821. In Great Britain titles of nobility can only be conferred by the sovereign, and that by patent, in virtue of which they become hereditary. Life peerages also are occasionally conferred. The nobility, as the term is commonly used, consists of those holding the titles already mentioned (or all above the rank of baronet) and their more immediate connections; but if the term were to be used as generally in Europe the gentry would also be included, or all families entitled to bear coat-armor. Those of the nobility who are peers of England, of Great Britain, or of the United Kingdom, have a hereditary seat in the House of Lords, while the Scottish peers elect sixteen of their number to represent their order, and the Irish peers elect twenty-eight representatives for the same purpose. See also *Britain* (sections *Parliament* and *Ranks* and *Titles*) and *Peer*. The institution of nobility has never been introduced into the United States or any of the other American republics.

Noble (nō'bl), an ancient English gold coin, value six shillings and eightpence, first struck in the reign of Edward III, 1344. The noble having increased in value to 10s., a coin of the former value of a noble was issued by

Noble of Edward III. A, Actual diameter of the coin.

Henry VI and Edward IV, and called an *Angel* (which see). Half-nobles and quarter-nobles were also in circulation at the same period.

Noblesville, a city, capital of Hamilton County, Indiana, on the White River, 22 miles N. N. E of Indianapolis. It has manufactures of iron, strawboard, carriages, carbon works and flour mills, etc. Pop. 5073.

Nocera (nō-chā'rā), a cathedral city of South Italy, province Salerno. It carries on cotton spinning and weaving. Pop. 11,933.

Noctiluca (nok-ti-lū'ka), a minute genus of marine animals placed among the Infusoria or the Rhizopoda, which in size and appearance much resemble a grain of boiled sago, or a little granule of jelly, with a long stalk. These minute animals are phosphorescent; and the luminosity which appears on the surface of the sea during the night is chiefly due to them.

Nocturne (nok-tèrn'), in painting, a nightpiece; a painting exhibiting some of the characteristic effects of night light. In music, a composition in which the emotions, particularly those of love and tenderness, are developed. It has become a favorite style of composition with modern pianoforte composers.

Noddy (nod'i; *Anous stolidus*), a seabird of the family Laridæ (gulls), widely diffused through the northern and southern hemispheres, and well known to sailors for its fearlessness or stupidity, allowing itself even to be taken by the hand; hence its name. The noddy is very abundant in warmer climates, as in the West Indies. There are several other species differing somewhat in details from *A. stolidus*.

Node (nōd), in astronomy, one of the points in which two great circles of the celestial sphere, such as the ecliptic and equator, the orbits of the planets and the ecliptic, intersect each other; and also one of the points in which the orbit of a satellite intersects the plane of the orbit of its primary. The node at which a heavenly body passes or appears to pass to the north of the plane of the orbit or great circle with which its own orbit or apparent orbit is compared is called the *ascending node;* that where it descends to the south is called the *descending node.* At the vernal equinox the sun is in its ascending node; at the autumnal equinox in its descending node. The straight line joining the nodes is called the *line of the nodes.* The *lunar nodes* are the points at which the orbit of the moon cuts the ecliptic.

Node, in physics, a point in a vibrating body, or system of vibrating particles, where there is no movement. When a body is vibrating, the vibratory motion is conveyed from one place to another by the action of the molecular forces of the particles on one another. Now when all the forces acting on a certain particle are at any instant in equilibrium, and the particle consequently remains at rest, there is said to be a *node* at the particle. If a plate of glass or metal be held in the hand, and a bow be drawn across the edge, particles of fine sand, previously placed on the plate, will arrange themselves in lines, along which it is evident no vibration has taken place. These lines, called *nodal lines,* generally form geometrical figures.

Nodier (nod-i-ā), CHARLES, a versatile French writer, born in 1780; died in 1844. At first a republican, then an ardent royalist, he lived an adventurous life till 1824, when he became librarian to the Bibliothèque de l'Arsenal. He wrote tales, romances, satires, dictionaries, travels, works on entomology, etc., and was a friend of all the literary men of the time, and had a certain influence on the Romantic school of French authors, including Hugo, Dumas, etc.

Nodosaria (nō-do-sā'ri-a), a genus of fossil foraminifera, having a shell composed of numerous chambers arranged in a straight line. They occur in chalk, tertiary, and recent formations.

Nogent-le-rotrou (nō-zhäṅ-lē-rō-trō), a town of Northern France, dep. Eure-et-Loir, 33 miles W. S. W. of Chartres, at the foot of a steep hill on which the old castle of Sully, Henry IV's minister, stands. It has manufactures of woolens, leather, etc. Pop. (1906) 6884.

Nogent-sur-Marne, a suburban village of Paris on the Marne, a little to the east of the capital. Pop. (1906) 11,463.

Nogi, a Japanese soldier, born in 1842. He took part in the revolution of 1868, in the suppression of the Satsuma rebellion of 1877, in the war with China, 1894-95, and was afterwards governor of Formosa. In the war with Russia he commanded the army that captured Port Arthur. On September 13, 1912, in accordance with an ancient Japanese custom, General Nogi and his wife died by their own hands in final tribute to the dead emperor, Mutsuhito.

Noirmoutier (nwär-mō-tyā), an island of Northwestern France, separated from the coast of Vendée by a narrow and shallow channel. It is about 10 miles long, with a breadth varying from 1 to 3 miles, and is generally fertile. Pop. (1906) 8388. The chief town, of the same name, has good anchorage and a productive oyster fishery. Pop. 2085.

Noisseville (nwäs-vēl), a village of German Lorraine to the east of Metz, the scene of a fiercely contested battle during the Franco-German war, 1870, between the forces of Prince Frederick Charles and those of Marshal Bazaine.

Nola (nō'lä), a town of Southern Italy, and a bishop's see, near Naples, in Caserta, said to have been built by the Etrurians before Rome. Pop. 11,927.

Noli-me-tangere (Lat. 'touch me not'), the name of a plant. See *Impatiens.*

Nollekens (nol'e-kenz), JOSEPH, an English sculptor, son of an Antwerp painter, born in London in 1737; died in 1823. He was placed early under Scheemakers, and in 1759 and

1760 gained premiums from the Society of Arts. Going subsequently to Rome, he had the honor of receiving a gold medal from the Academy of Painting and Sculpture. On his return to England in 1770 he was elected an Associate of the Royal Academy (1771) and a Royal Academician (1772). His *Venus with the Sandal* is his principal ideal production; but his professional reputation rests mainly upon his portrait busts.

Nolle Prosequi (nol'le pros'e-kwī; Lat. 'to be unwilling to prosecute'), in law, a stoppage of proceedings by a plaintiff, an acknowledgment that he has no cause of action.

Nomads (nom'adz), tribes without fixed habitations, generally engaged in the tending and raising of cattle, and changing their abode as necessity requires or inclination prompts. North Africa, the interior of North and South America, and the northern and middle parts of Asia, are still inhabited by nomadic tribes, who are bandits and robbers.

Nome (nōm), the largest city in Alaska, situated in the Northern district, on the coast of Bering Sea, and in an important gold-producing area. Pop. (1910) 2600.

Nominalism (nom'i-nal-izm), the doctrines of those scholastic philosophers who followed John Roscellin, canon of Compiègne in the eleventh century, in maintaining that general notions (such as the notion of a tree) have no realities corresponding to them, and have no existence but as names (*nomina*) or words. They were opposed by the *realists*, who maintained that general ideas are not formed by the understanding, but have a real existence independent of the mind and apart from the individual object. During the twelfth century the controversy between the nominalists and the realists was carried on with great keenness, and in the beginning of the fourteenth the dispute was revived by the English Franciscan William of Occam, a disciple of the famous Duns Scotus. The controversy, long continued, gave rise to actual persecution.

Non-activity. See *Neutrality*.

Non-commissioned Officer, one who, while he is not commissioned as an officer, holds an appointment by virtue of which he exercises authority over the private soldiers. Such are sergeant-majors, quartermaster-sergeants and sergeants.

Non Compos Mentis ('not of sound mind'), an expression used of a person who is not of sound understanding, and therefore not legally responsible for his acts.

Nonconformists (non-kon-form'ists), those who refuse to conform to an established church. The name was first applied to those English clergymen who, at the Restoration, refused to subscribe to the Act of Uniformity, and were in consequence ejected from their livings. Relief was afforded by the Toleration Act of 1689. The repeal of the Corporation and Test Acts in 1828 removed the civil disabilities under which Nonconformists had previously been placed, and religious tests at the universities were abolished in 1871 and 1873. See *England* (*Ecclesiastical History*).

Non-effective, the term applied in military language to designate that portion of the forces not in active service or not in a condition to proceed to active service, such as retired officers, pensioners, and the like.

Nones (nōnz), (1) in the Roman calendar, the fifth day of the months January, February, April, June, August, September, November and December, and the seventh day of March, May, July and October. The *nones* were so called as falling on the *ninth* day before the ides, both days included. (2) The office for the ninth hour, one of the breviary offices of the Roman Catholic Church.

Nonjurors (non-jōō'rerz), those who refused to take the oath of allegiance to the government and crown of England at the Revolution, when James II abandoned the throne. See *England* (*Ecclesiastical History*).

Nonnus (non'us), or NONNOS, a later Greek poet, born at Panopolis, in Egypt, who lived about the beginning of the fifth century A.D. He is the author of a poem entitled *Dionysiaca*, in forty-eight books, in which the expedition of Bacchus (Dionysius) to India is described; also of a paraphrase, in Greek hexameters, of the Gospel of St. John.

Non-residence, failure or neglect of residing where official duties require one to reside, or on one's own lands; especially residence by clergymen away from their cures. A beneficed clergyman of the English Church absenting himself without license from his bishop for more than three months in any year is liable to forfeit part of his emoluments.

Non-resistance, submission to authority, power, or usurpation without opposition. This used to be inculcated by the believers in the

doctrine of the divine right (which see) of kings.

Nonsuit (non'sūt), a term in law. When a person has commenced an action, and at the trial fails in his evidence to support it, or has brought a wrong action, he is nonsuited. A nonsuited plaintiff may afterwards bring another action for the same cause, which he cannot do after a verdict against him.

Nootka (nōt'ka), an island of Canada on the west coast of Vancouver Island, at the entrance of Nootka Sound, an inlet running about 10 miles inland.

Nootka-dog, a large variety of dog domesticated by the Indians of Nootka Sound, chiefly remarkable for its long wool-like hair, which when shorn off holds together like a fleece, and is made into garments.

Noraghe (no-rä'gä). See *Nuraghi.*

Nord (nōr), a department in the northeast of France, bordering with Belgium; area, 2170 square miles. The coast, marked by a long chain of sandy hillocks, furnishes the two harbors of Dunkirk and Gravelines. The interior is a monotonous but fertile alluvial flat, intersected by sluggish streams and canals. The husbandry, nearly akin to that of Flanders, is careful, skilful and productive. The principal minerals are coal and iron, which are extensively mined; and the occupations connected with or depending on them render this department among the most important in France. The capital is Lille. Pop. 1,895,861.

Nordau (nor'dą), MAX SIMON, author, born of Jewish ancestry at Budapest, Hungary, in 1849. He became a physician, wrote works of travel, but became widely known by the pessimistic views of society and literature expressed in his *Conventional Lies of Society, Paradoxes and Degeneration.* In the latter he maintained that much in contemporary life and literature is evidence of physical and mental degeneration. He also wrote dramas, poems and novels.

Norden (nōr'den), a seaport of Prussia, in Hanover, 16 miles north of Emden, on a canal which at a short distance communicates with the sea. Pop. (1905) 6717.

Nordenfeldt (nor'den-felt), a Swedish engineer, born in 1844, the inventor of a machine-gun which bears his name, also of several torpedoes and a submarine boat.

Nordenskiöld (nor'den-sheuld), NILS ADOLF ERIK, BARON, a Swedish naturalist and explorer, born at Helsingfors in 1832. He devoted himself to science, and was appointed to some important posts, but becoming obnoxious to the Russian authorities he settled in Sweden. In 1851 he went with an expedition to Spitzbergen, to which he several times returned, assisting in the measurement of an arc of the meridian and mapping the southern part of Spitzbergen. On a North Polar expedition in 1868 Nordenskiöld reached the high latitude of 81° 42′. Having turned his attention to Siberia, after making two successful voyages through the Kara Sea to the Yenissei, he decided to attempt the accomplishment of the northeast passage, or passage by sea round Northern Asia to the Pacific. Aided by the King of Sweden and others, Nordenskiöld was enabled, July, 1878, to sail in the *Vega,* and succeeded in his project, his vessel doubling the most northern point of the Old World, Cape Tchelyuskin. After passing through Bering Strait it reached Japan, September 2, 1879. The object of the expedition being thus accomplished, Nordenskiöld was enthusiastically welcomed in Europe and created a baron by the King of Sweden. He published reports of his several voyages and died in 1901.

Baron Nordenskiöld.

Norderney (nor'der-nī), a small island belonging to Prussia, on the coast of East Friesland, reachable on foot at low tide; area, about 5 square miles; pop. 3888, chiefly fishermen of the old Frisian stock. At the southwest end of the island is a village famous as a seabathing place throughout Germany, and visited annually by some 13,000 persons.

Nordhausen (nord'hou-zn), a town in Prussian Saxony, 38 miles N. N. W. of Erfurt, pleasantly sit-

vated at the foot of the Harz Mountains. It has a Roman Catholic cathedral, a fine late Gothic edifice with a Romanesque crypt, an old town hall, etc. It manufactures leather, tobacco, carpets, cotton and linen cloth, chemicals, etc., and has extensive distilleries and breweries. Pop. (1910) 32,564.

Nordica (Norton) (nôr'di-ka), LILLIAN, American soprano singer, born at Farmingham, Maine, May 12, 1859; died May 10, 1914. She studied music in Boston, and afterward in Milan. Her greatest successes were achieved in Wagnerian opera, and she sang at Bayreuth in 1894.

Nördlingen (neurd'ling-èn), a walled town of Bavaria, near the Würtemberg frontier, with well-preserved walls and towers, and a handsome Gothic church, surmounted by a remarkable tower 290 feet high. The Swedes were defeated here September 6, 1634. (See *Thirty Years' War.*) Pop. (1905) 8512.

Nore (nôr), (1) part of the estuary of the Thames, about 50 miles below London, and east of Sheerness, encumbered with sandbanks, on one of which is a floating light.—(2) A river of Ireland, rising in the Slieve Bloom Mountains, on the borders of Tipperary and Queen's County, and joining the Barrow about 2 miles above New Ross; length 70 miles. It admits vessels of considerable size as far as Inistioge, and barges to Thomastown.

Norfolk (nôr'folk), a county of England, having the North Sea on the N.E. and the Wash on the N.W., its area 2044 sq. miles. The coast consists principally of cliffs, partly chalk and partly alternate strata of clay, gravel, loam and sand. These are gradually being undermined by the sea, which is in many places making inroads on the land. Considerable areas on the coast of the Wash, however, have been reclaimed from the sea. The Yare and its tributaries expand near the sea into meres or *broads*, which, largely covered with bulrushes and sedges, are the resort of a great variety of waterfowl. This county has a high reputation for its progress in agriculture. The crop raised in greatest perfection is barley. Most of it is made into malt, and then sent elsewhere. The manufactures consist chiefly of woven goods. Norfolk has extensive fisheries of both herrings and mackerel, the former being the most important. The county town, Norwich; the chief seaport is Yarmouth. Pop. (1911) 488,630.

Norfolk, a city and port in the county of the same name, Virginia, on the Elizabeth River, 22 miles from the ocean. It is 83 miles S.E. of Richmond, and is next to it in size among the cities of Virginia. In connection with Portsmouth it is the most important naval station in the United States, and has a large, safe and easily accessible harbor, admitting vessels of the largest class. The entrance to it is defended by Fortress Monroe. It is one of the chief coaling stations of the world, and has a large shipping trade in cotton, grain, early fruits and vegetables, peanuts, oysters, etc. There are various manufactures and ship and boat yards. At the outbreak of the Civil war it was the chief naval station of the Confederate States. Pop. 89,140.

Norfolk, a city in Madison County, Nebraska, on the north branch of Elkhorn River; an important railroad and jobbing center. It has grain elevators, cereal mills, canning factories, railroad shops, etc. Pop. 8000.

Norfolk-crag, in geology, an English tertiary formation belonging to the older Pliocene, resting on the chalk and London-clay. It consists of irregular beds of ferruginous sand-clay, mixed with marine shells, and mastodon and elephant remains have been discovered.

Norfolk Island, an island in the South Pacific, about 800 miles east of New South Wales, with which it is governmentally connected, is about 6 miles long by 4 broad, and has a fertile soil and salubrious climate, readily producing sweet potatoes, various tropical fruits, wheat, maize, etc. The coasts are precipitous and there is no good landing place. At one point it rises to the height of 1050 feet. The Norfolk Island pine grows to a great size, but is now comparatively scarce. Discovered uninhabited by Captain Cook in 1774, it was long used as a penal settlement, with New South Wales, and in 1856 it was assigned to the Pitcairn Islanders for their residence. (See *Pitcairn Island.*) These descendants of the mutinous crew of the *Bounty* were long represented as a community living in almost primitive innocence and simplicity, but recent reports hardly bear out the rosy picture. Their numbers amounted in 1885 to 481, not including the members of the mission station founded in 1867 and carried on under the Bishop of Melanesia. This station is intended as a center from which Christianity may be propagated in the Pacific; it has a farm of 1000 acres and educates about 150 Polynesian boys and girls besides native pastors.

Norfolk Island Pine, a tree of the genus *Araucaria* (*A. excelsa*), nat. order Coniferæ, formerly abounding on Norfolk Island, where it attains a height of 200 feet or more, with a diameter of 10 or 11 feet. Its timber is valuable, being white, tough and close-grained. It is one of the most beautiful of trees. Though an *Araucaria* it is very unlike the common species (*A. imbricāta*).

Noria (nō'-ri-a), a hydraulic machine used in Spain, Syria, Egypt, and other countries for raising water. It consists of a water-wheel with revolving buckets or earthen pitchers, like the Persian wheel, but its modes of construction and operation are various. As used in Egypt it is known as the *sakieh*. These machines are generally worked by animal power, though in some countries they are driven by the current of a stream acting on floats or paddles attached to the rim of the wheel.

Norman Architecture—Abbaye aux Dames, Caen.

Noric Alps. See *Alps*.

Noricum (nor'i-kum), the Roman name of a region that corresponded nearly to what is now Upper and Lower Austria and Styria.

Normal (nōr'mal), in geometry, a perpendicular; the straight line drawn from any point in a curve at right angles to the tangent at that point; or the straight line drawn from any point in a surface, at right angles to the tangent plane at that point.

Normal Schools, called also TRAINING COLLEGES, schools in which teachers are instructed in the principles of their profession and trained in the practice of it. The name is derived from the French *écoles normales*, established at the close of the eighteenth century. These schools are now numerous in all countries that have a well-organized system of education. They may be either for teachers in elementary schools or for those of the secondary schools, and may be for either sex only or for both combined. In the United States the normal school is an important part of the system of public school education.

Norman Architecture (nōr'man), the round arched style of architecture, a variety of the Romanesque, introduced at the Norman Conquest from France into Britain, where it prevailed till the end of the twelfth century. In its earlier stages it is plain and massive with but few moldings, and those principally confined to small features; as the style advanced greater lightness and enrichment were introduced, and some of the later examples are highly enriched. The chevron, billet, nail-head and lozenge moldings are distinctively characteristic of this style. The more specific characteristics of churches in this style are: cruciform plan with apse and apsidal chapels, the tower rising from the intersection of nave and transept; semicylindrical vaulting; the doorways, deeply recessed, with highly decorated moldings; the windows small, round-headed, placed high in the wall, and opening with a wide splay inside; piers massive, generally cylindrical or octagonal, and sometimes enriched with shafts; capitals cushion-shaped, some-

times plain, more frequently enriched; buttresses broad, with but small projection; walls frequently decorated by bands of arcades with single or interlacing arches. In course of time the arches began to assume the pointed character; the walls, etc., to be less massive; short pyramidal spires crown the towers; and altogether the style assumes a more delicate and refined character, passing gradually into the Early English. Besides ecclesiastical buildings, the Normans reared many castellated structures, the best remaining specimen of which is the Keep of the Tower of London. The Norman architects were not distinguished for science in construction. The walls of their buildings were of great thickness, and the piers supporting their arches were usually of immense girth, yet notwithstanding this massiveness their works frequently gave way. The Abbaye aux Hommes and the Abbaye aux Dames at Caen, Normandy, afford excellent examples of this style; as also parts of the cathedrals of Durham, Peterborough, Norwich and Canterbury, as well as many smaller churches.

Norman Conquest, in English history, the successful attempt made by William of Normandy in 1066 to secure the English crown from his rival Harold, son of Earl Godwin. See *England* (*History*).

Normandy (nôr'man-di), an ancient province in the north of France, now divided into the departments of Seine-Inférieure, Eure, Orne, Calvados and Manche. On the decline of the Roman Empire it was seized by the Franks, and afterwards, in the tenth century, wrested from them by the Normans or Northmen, from whom it received its name. (See *Northmen.*) Charles the Simple gave his sanction to the conquest made by the Normans, and Rollo, their chief, received the title of Duke of Normandy. William the Bastard, sixth in succession from Rollo, having become king of England in 1066, Normandy became annexed thereto. On the death of William it was separated from England and ruled by his son Robert, and was afterwards ruled by the kings of England until Philip Augustus wrested it from John and united it to France in 1203. Although several times invaded by the English it was finally recovered by the French in 1450. Normandy is one of the richest and most fertile parts of France.

Norman French, a dialect of old French which became the Anglo-Norman of England. It was the language of legal procedure in England till the time of Edward III, and is still used in several formal proceedings of state.

Normans (literally 'north-men'), the descendants of the Northmen who established themselves in Northern France, hence called Normandy. Besides the important place occupied in history by the Normans in Normandy and England, bands of Normans established themselves in S. Italy and Sicily, and Norman princes ruled there from the middle of the eleventh till the end of the twelfth century. See *Normandy* and *Northmen*, also *Guiscard.*

Normanton (nôr'man-tun), a township in the West Riding of Yorkshire, on the Calder, giving name to a parliamentary division of Yorkshire. Pop. 15,033.

Norns (nôrns), in Scandinavian mythology, the three Fates, representing the *past*, the *present* and the *future*, whose decrees were irrevocable. They were represented as three young women, named respectively Urd, Verdandi and Skuld.

Norris (nor'is), Edwin, an eminent English linguist, and one of the founders of Assyriology; born in 1795; died in 1872. For more than twenty-five years he was secretary to the Asiatic Society, and became a great authority on cuneiform writing. His great work is his *Assyrian Dictionary* (1868-72), which marks an epoch in cuneiform studies. The Celtic dialects also received a share of his attention.

Norris, Frank, novelist, born at Chicago in 1870; died in 1902. He studied art in Paris and literature in the United States, and became a newspaper correspondent in South Africa and Cuba. His first novel, *Iberville* (1891) was a tale of old California. He first attracted attention by *McTeague* (1899) and *Lady Letty* (1900), but is chiefly known by his projected and partly written epic of the wheat: in three stories two of which were written, *The Octopus*, detailing the troubles of the wheat growers with the railroad monopoly, and *The Pit*, describing the struggles on the wheat exchange in Chicago. *The Wave* (unwritten) was to deal with the story of the wheat after reaching a famine-stricken community in Europe.

Norris, William Edward, an English novelist, born in 1847, son of Sir William Norris, chief justice of Ceylon. He studied law, but never practiced, devoting himself instead to literature. He wrote numerous novels, among them *My Friend Jim*, *The Rogue*, *The Dancer in Yellow*, *The Fight for the Crown*, etc.

Norristown (nor'is-toun), a city of Pennsylvania, county seat of Montgomery Co., on the Schuylkill, 17 miles N. W. of Philadelphia. It has important manufactures including cotton and woolen goods, carpets, flour, cigars, lumber, machinery hardware, etc. Here is a State hospital for the insane, and near by are several charitable institutions. Pop. 30,000.

Norrköping (nor-cheup'ing), a town of Sweden, at the mouth of the Motala Elf in the Bravik, a gulf of the Baltic. The Motala Elf flows through the town, making several falls within it, and is crossed by several bridges. It has manufactures of woolens, cottons, etc., and has sugar refineries and shipbuilding yards. Pop. 41,008.

Norse (nōrs), the language of Scandinavia. *Old Norse* is represented by the classical Icelandic, and still with wonderful purity by modern Icelandic. The literature includes the early literature of the people of Norway, Sweden and Iceland.

Norte (nor'tä), RIO GRANDE DEL, a river of Mexico, rising in the Rocky Mountains and emptying itself into the Gulf of Mexico. Its mouth is 1200 feet wide, but is barred so as to afford entrance only to boats. Length about 2000 miles.

North, one of the cardinal points, being that point of the horizon or of the heavens which is exactly in the direction of the North Pole. See *Pole.*

North, CHRISTOPHER. See *Wilson, John.*

North, FREDERICK, LORD, Earl of Guildford, the eldest son of Francis, second earl of Guildford, born in 1732; died in 1792. He belongs to English history as chief of the administration during the American war of Independence. Obtaining a seat in the House of Commons he was, in 1759, appointed a commissioner of the treasury, but resigned in 1765, when he joined the opposition to the Rockingham ministry. He came into office again with the Grafton ministry, 1766; in 1767 became chancellor of the exchequer; and in 1770 succeeded the Duke of Grafton as minister, when his retention of the tea-duty, imposed upon the American colonists, led to the rising in America, and to the declaration of independence, July 4, 1776. Lord North resigned March 20, 1782. He became Earl of Guildford by the death of his father in 1790.

North Adams, a city of Berkshire County, Massachusetts, on the Hoosac River, near the west end of the great Hoosac Tunnel, 36 miles E. of Albany. It is surrounded by beautiful mountain scenery, is the seat of a State normal school, and has extensive cotton, fruit and woolen mills, also boot and shoe, paper-box and other industries. Pop. 22,019.

Northallerton (nōr th'al-er-tun), a town of England, Yorkshire, in the North Riding, 32 miles N. N. E. of York. The inhabitants are chiefly engaged in agriculture, and some tanning and currying are carried on. Pop. 7745.

North America, the northern half of the western continent, or New World. Under *America* a general description of North America has been given, more especially as compared and contrasted with South America, but some additional information may be appended.

Physical Features.—The mainland of North America, in the widest sense of the name, is united to South America by the Isthmus of Panama, and extends from lat. 7° *N.* to lat. 72 N. In a narrower sense, and excluding the southern portion often spoken of as Central America, it extends only from lat. 15° N. To it on the north belongs an extensive archipelago of arctic islands, to the northeast of which lies Greenland, the latter generally regarded as belonging to America. The figure of North America is very irregular, and in that respect it resembles Europe. On the north is the great indentation of Hudson Bay, almost an inland sea, connected with the Atlantic by Hudson Strait. On the east are the Gulf of St. Lawrence, with the island of Newfoundland and the peninsula of Nova Scotia at its entrance; and the Gulf of Mexico, having on one side of its entrance the peninsula of Florida, on the other that of Yucatan. From the entrance of the gulf stretch eastward Cuba and others of the West India Islands. The chief features of the Pacific coast are the Gulf of California and peninsula of Lower California—further north Vancouver Island and the chain of other islands lining the coast. The continent terminates in a peninsular extension forming Alaska Territory, separated from Asia by Behring's Sea and Strait, the latter about 50 miles wide. The area of North America (excluding Greenland but including the West Indies) is about 8,150,000 sq. miles, or considerably more than double that of Europe. As regards its surface and physical features generally it presents certain points of similarity with Europe—numerous large rivers, elevated mountain chains, and large plains suited for the growth of cereals and other crops;

but most of its physical peculiarities are on a scale of greater magnitude than those of Europe. Thus its greatest mountain system, that of the Cordilleras (of which the Rocky Mountains strictly speaking form only a part), extends along the entire western side of the continent for a distance of at least 5000 miles, and rises to the height of 20,000 feet. The great plains which stretch on the east of these mountains from the Arctic Ocean to the Gulf of Mexico are also of far greater magnitude than those of Europe, contain the largest bodies of fresh water in the world, and are intersected by a series of rivers, one of which, the Mississippi-Missouri, is the longest of all rivers (length 4200 miles). The basin of the Mississippi-Missouri is bounded on the east by the Appalachian chain, one of much less comparative magnitude, but forming an important feature of the surface conformation of the continent. In its great navigable rivers and lakes North America possesses an immense system of inland navigation. As the great watershed of North America is formed by the Rocky Mountains, all the chief rivers, with the exception of the St. Lawrence, have their sources on its slopes or plateaus, whence they flow to the Gulf of Mexico, the Pacific, the Arctic Ocean, or Hudson Bay. At more than one point in the system the water-parting is formed by a lake or marsh sending a stream on one side to the Pacific and on the other side to the Atlantic. The Nelson, Mackensie and Yukon are the chief rivers which flow into the Arctic Ocean, the last named having only recently been recognized as one of the great rivers of the world. The St. Lawrence is the largest of those which flow directly to the Atlantic. The lakes drained by the St. Lawrence, namely, Superior, Michigan, Huron, Erie, and Ontario, together cover an area of 97,000 square miles (or more than that of Great Britain). The largest, Lake Superior, has an area equal to that of Ireland. Other large lakes further to the north include Winnipeg, Athabasca, Great Bear Lake and Great Slave Lake. The principal islands on the east are those of Newfoundland, Anticosti, Prince Edward and Cape Breton, all at the mouth of the St. Lawrence; the Bahama Islands, Cuba, Hayti, Porto Rico and Jamaica. On the northwest coast the principal islands are Vancouver's Island, Queen Charlotte's Island and King George III's Archipelago. The only others of any importance are the Aleutian Islands, stretching west from the peninsula of Alaska; the islands in the Arctic Ocean are almost inaccessible.

Climate and Productions.—The climate, which ranges all the way from tropical to frigid, admits of a vast variety of vegetable products being grown, and though in the far north extremely rigorous, as a whole it is healthful and well suited to the peoples of Teutonic origin who form so large a portion of the inhabitants. As regards minerals and other products North America is exceptionally favored, possessing abundance of all those that are most valuable—gold, silver, copper, iron, lead and coal. Immense quantities of gold and silver have been produced. The coal fields are very extensive. There are vast quantities in the eastern and central and some of the western states, while Alaska is also very rich in coal. Iron is worked in many parts (especially in the Lake Superior district), as are also copper, zinc, aluminum and lead. Salt is likewise widely diffused. The forests are of vast extent, and include a great variety of the most useful timber trees, as pines, oak, ash, hickory, beech, birch, poplar, sycamore, chestnut, walnut, maple, cedar, etc. Maize or Indian corn is the only important farinaceous plant peculiar to the New World, but almost all fruits and grains known to Europe are cultivated to perfection in North America, to which Europe is now indebted for immense quantities of agricultural and dairy produce, as well as provisions of various kinds, and raw materials such as cotton, etc.

Divisions.—The political divisions of North America are the United States, the Dominion of Canada, Newfoundland, Mexico, and the Central American States. Canada occupies almost the whole of the continent north of the great lakes and lat. 49° N. The territory of the United States extends from the British possessions to Mexico and the Gulf of Mexico, and from the Atlantic to the Pacific Ocean. Alaska Territory, belonging to the United States, occupies the northwest corner of the continent. The republican form of government prevails everywhere except in the British dominions. The areas and population are as follows:

	Area, sq. miles	Pop.
British America (including Newfoundland)	3,803,000	7,440,000
United States (including Alaska)	3,617,673	92,036,622
Mexico	767,605	15,063,207
Central American States	208,500	5,370,515
West Indies	95,000	6,500,000
	8,581,778	126,410,344

People.—The population (in spite of the varied immigration) consists

most largely of people of British or at least Teutonic origin, though the French and Spanish elements are also well represented. In the United States people of negro race numbered in 1910, 9,828,296. The aboriginal tribes of North America, known as Indians, are of a hardy and warlike character, but they are gradually dying out before the march of the white man. They have all so strong a resemblance to each other in physical formation and in intellectual character as to leave no doubt of their belonging to one family. (See *Indians, American.*) In Mexico a people of the same race, the Astecs, had made considerable progress in civilization before the arrival of the Europeans. In the extreme north we find the Eskimos, who differ considerably from the Indians, but are often classed along with them as people of Mongoloid origin.

Discovery.—America is now believed to have been visited by Norsemen in the tenth and eleventh centuries; but the modern discovery is due to Columbus, who reached one of the West Indies in 1492. Following his lead the first to reach the mainland was John Cabot, who, with his son Sebastian, sailed from Bristol in 1497, and on June 24 came in sight of Labrador. In 1512 Florida was discovered by Ponce de Leon. Giovanni Verazzano, a Florentine sent out by Francis I of France in 1524, surveyed upwards of 2000 miles of coast, and discovered that portion now known as North Carolina. Ten years afterwards, Jacques Cartier, a seaman of St. Malo, sailed from that port for Newfoundland, the north coast of which he surveyed and minutely described. He subsequently made several voyages, and was the first European to enter the St. Lawrence, ascending it as high as the site of Montreal. The Spaniards had previously conquered Mexico, and a desire to extend their dominion (1519-21) in a northerly direction led to further discoveries in North America. The coast of California was discovered by Ximenes, and in 1539 the Gulf of California was first entered by Francisco de Ulloa. In 1578 Drake visited the northwest coast. These discoveries were followed by those of Davis in 1585-87, Hudson in 1610, Bylot and Baffin in 1615-16, all in the northeastern seas. By this time settlements had been made by the French, English and Dutch. The French occupied Nova Scotia and Canada, and later Louisiana. Captain Behring, who was sent out in 1725 by the Empress Catharine, set at rest the disputed point whether Asia and America were separate continents. Other names associated with American maritime discovery are Cook, Meares, Vancouver, Kotzebue, and, more recently, Ross, Parry, Franklin, Beechey, McClintock; Kenzie, Back, Rae, Simpson and Schwatka, and polar discoverers Kane, Hall, Hayes, Greely, Peary, etc. (See also *North Polar Expeditions.*) The Canadian authorities have in recent years done much in the way of survey and exploring the less-known portions of the Dominion, and Alaska has been made known by the efforts of expeditions from the United States. For general history see *Canada, United States, Mexico,* etc.

Northampton (nōr th'amp-tun), a borough of England, capital of the county of same name, on the left bank of the Nene, which is connected with the Grand Junction Canal. Northampton has several noteworthy churches, especially one of the three remarkable round churches of the country —a Norman structure of great interest; and the other more important buildings are the town-hall, the shire or county hall, the corn exchange, cattle market, infirmary, etc. The staple manufacture is boots and shoes for home and export trade. The currying of leather is also carried on on a large scale. There are also iron and brass foundries, breweries, corn mills, etc., and iron ore, found near by, is smelted. Pop. 92,041. The county, in south-central England, has an area of 998 sq. miles. It is pleasantly diversified by low hills, beautiful vales, extensive woodlands copiously watered by numerous rivers and streams, the chief of them being the Nene, which flows through the county to Peterborough and the Wash. The soil is mostly rich and fertile, consisting principally of various kinds of loam. The principal grain crops are wheat, barley, and oats. The rearing of sheep and cattle is a principal object with the Northamptonshire farmers. Iron ore of excellent quality is found in vast beds, and of late years this has developed into an important industry. Pop. 348,552.

Northampton, a city, capital of Hampshire Co., Massachusetts, on the Connecticut River, 17 miles N. by W. of Springfield, beautifully situated in a fertile intervale among hills, 2 miles from Mount Holyoke and about 5 miles from Mount Tom. It is a frequented summer resort. It is the seat of Smith College, one of the leading woman's colleges; the State lunatic asylum, and institution for deaf mutes, the Forbes Library, etc. Its industries include silk thread, satins, cutlery, hardware, silverplated ware, etc. At Flor-

ence and Leeds, both within the city limits, are large mills and factories. Pop. 19,431.

Northampton, a borough in Northampton Co., Pennsylvania, 13 miles W. by N. of Easton. It manufactures cement, flour, malt liquors, silk, art glass, incubators, etc. Pop. 8729.

North Andover, a town (township) in Essex County, Massachusetts, with a village of the same name, about 28 miles N. of Boston, where woolen goods, machinery, etc., are produced. Pop. of town 5529.

North Attleborough (at'l-bur-ō), a town (township) of Bristol County, Massachusetts, 14 miles N. by E. of Providence, R. I. It has manufactures of jewelry and jewelers' supplies, etc. Pop. 9562.

North Bay, a town on Lake Nipissing, Ontario. It is in a mining region. Pop. (1911) 7737.

North Borneo (bōr'ne-ō), the territory occupying the northern part of the island of Borneo (which see) under the jurisdiction of the British North Borneo Company, having been ceded by the Sultans of Sulu and Brunei in 1877-78 and the company having received a royal charter in 1881. The territory embraces 31,000 square miles, and has a pop. of 150,000. The interior is very mountainous, one summit, Mount Kini Balu, rising to a height of 13,700 feet. A large portion of the surface is forest and jungle. There is a coast line of 900 miles, and several splendid harbors. Coal and gold have been found, and the territory is believed to be very rich in minerals. The exports comprise wax, edible birds'-nests, cocoanuts, gutta-percha, sago, tobacco, rattans, india rubber and timber. With Brunei and Sarawak it was made a British protectorate in 1888.

North Braddock, a borough of Allegheny Co., Pennsylvania, forming part of Bradford Township. Pop. 11,824.

Northbridge, a town of Worcester Co., Massachusetts, on Blackstone River, 11 miles S. E. of Wooster. There are manufactures of shirtings, cotton prints, and woolens. Pop. 8807.

Northbrook (nōr th'brōk), THOMAS GEORGE BARING, EARL OF, an English statesman, son of the first Baron Northbrook, born in 1826. He entered parliament in the Liberal interest in 1857; was a lord of the admiralty from 1857 to 1858, under-secretary of state for India from June, 1859, to January, 1861, for war from the latter date to June, 1866, and again on the accession of Mr. Gladstone from December, 1868, to February, 1872, when he was appointed viceroy of India. This office he resigned in 1876, and was created Earl of Northbrook. On the formation of the Gladstone cabinet, in 1880, Lord Northbrook was appointed first lord of the admiralty. In 1884 he was placed at the head of the British commission governing Egypt. He died in 1904.

North Cape, a celebrated promontory, forming the most northern point of Europe, and situated on the north of the island of Magerōe, which is separated from the mainland of Sweden by a narrow channel.

North Carolina, one of the original United States, on the Atlantic coast, is bounded N. by Virginia, E. and S. E. by the Atlantic, S. by South Carolina and Georgia, and W. by Tennessee; area, 52,426 sq. miles. The surface is very varied. For nearly 100 miles inland from the coast it is level, marshy and swampy, the soil sandy but very fertile; the middle section has a varied surface and fine soil; farther inland hilly land begins, rising until it reaches the mountains of the western border. Some of the peaks here reach an elevation from 5000 to 6000 feet. Here there is good grazing land, with much hard timber, and stock-raising is carried on. In the east the river bottoms and reclaimed swamp lands yield abundantly, rice, cotton, corn, apples, peaches, pears, honey and beeswax being produced. Cranberries are extensively raised, and the Catawba and Scuppernong grapes are natives of the soil. The middle section is adapted to the culture of the cereals, tobacco and cotton, and sweet potatoes are a leading staple. In the production of peanuts North Carolina stands third among the states. The pine section of the coastal region is largely uncultivated, but there is a considerable production of timber, tar, and turpentine. The fisheries are large and valuable. The state is rich in useful minerals, coal and iron being very abundant. The coal is largely bituminous and occurs in two large fields, while magnetic and hematite iron ores occur over a wide region, the Cranberry mine, in Mitchell County, yielding the purest magnetic ore yet found in the United States. Gold is mined to a considerable extent, and there is a branch of the United States mint at Charlotte. Silver, lead and zinc are found, and copper ores cover a wide field. Mica is mined and corundum and many other minerals occur, including some precious stones. Cotton goods form the leading manu-

facture, followed by tobacco manufactures, lumber and timber products, cotton-seed oil and cake, and flour and gristmill products. Large quantities of lumber, cotton, tobacco, and other products are exported to coastwise and foreign ports. There are numerous rivers, including the Cape Fear, the Roanoke, the Neuse, the Tar, the Pamlico, and others, yielding several hundred miles of navigable waters. Raleigh is the capital, the other chief cities being Charlotte, Wilmington, Asheville, Durham, Winston-Salem and Greensboro. North Carolina was one of the seceding Confederate States and was the last important battleground in the Civil War. Pop. (1910) 2,206,287.

Northcliffe, 1st Baron, of Isle of Thanet, Alfred Charles Harmsworth (1865-), an English newspaper owner, was born in Dublin, Ireland, removed to London and established several weekly and monthly papers. He founded the *Daily Mail*, a halfpenny newspaper which had a sensational tone. In 1908 he secured control of the London *Times*. In 1917, during the European war, he visited America on a special mission from Great Britain, and was for a time Director of Propaganda.

Northcote, STAFFORD. See *Iddesleigh*.

North Dakota (da-kō'ta), one of the northwestern United States, bounded N. by Canada, S. by South Dakota, E. by Minnesota, and W. by Montana; area, 70,837 square miles; length, about 355 miles; width, about 200 miles. On its eastern border is the navigable Red River of the North, and the Missouri traverses the State from the W. to the S. E. through a region of high plains and plateaus. It is navigable for boats of three to six hundred tons burden. Its principal affluents are the Yellowstone, Little Missouri, Knife, Heart, and Cannon Ball rivers. There are other streams in the north flowing into Canada. The general elevation ranges from 800 feet on the E. to 2000-2800 on the W. and S. W.; the portion of the State E. of the Missouri being mostly rolling prairie; that W. being more broken. In the N. is a group of hills of moderate elevation known as Turtle Mountain. Between the basins of the Mouse and Red rivers is a limited area with no outlet to the sea for its waters, and containing a large salt lake, known as Devil's Lake, a picturesque sheet of water about 40 miles long. In the S. W. is a district of eroded dry hills, called the 'Bad Lands,' generally a good grazing region. The land on the Missouri slope has a black, sandy soil, with dry subsoil; that of the Red River valley is a vegetable deposit of unsurpassed richness. Minerals of all kinds are wanting except lignitic coal and clay, of which there are extensive deposits. A successful method of making lignite coal into briquettes has been found, and the manufacture for commercial purposes has begun. Salt springs and streams are numerous in the Red River Valley. The air is dry and invigorating, and the climate very healthful, though severe in winter, the mercury sometimes falling to 40° below zero. The absence of humidity enables this severe weather to be borne with comparatively little discomfort. Wheat has been the leading agricultural product, but corn raising and dairy industries are rapidly increasing. The Red River valley is unsurpassed as a wheat-growing section, and Dakota wheat has a wide reputation. Other important crops are flaxseed, oats, barley, hay, potatoes, rye and Indian corn. In the western section stock-raising is an important industry, and much wool is produced. The manufactures are mainly adapted to local needs. The principal towns are Bismarck, the capital, Fargo and Grand Forks. The Territory of Dakota was organised in 1861, and divided into the States of North and South Dakota in 1889. Pop. (1910) 577,056.

Northeast Passage, a passage for ships along the northern coasts of Europe and Asia to the Pacific Ocean, formerly supposed likely to be of commercial value. The first to make the complete voyage by this passage was the Swedish explorer Nordenskiöld, after it had been from time to time attempted in vain for upwards of three centuries.

Northeast Territory, a territory of Canada on the east of Hudson Bay, and extending south to Quebec province. It forms part of the peninsula of Labrador, and is little known. It is intersected by Rupert's River, East Main River, Big River, Great and Little Whale River, etc., all flowing west to Hudson Bay, and contains numerous lakes. Furs are the only commodity as yet obtained from it. See *Canada*.

Northern-drift, in geology, a name formerly given to boulder-clay of the Pleistocene period, when its materials were supposed to have been brought by polar currents from the north.

Northern Lights. See *Aurora*.

Northern Mythology (mith'ol-ō-ji), the

mythology of the Scandinavian peoples inhabiting Denmark, Norway, Sweden and Iceland. According to the Scandinavian mythical cosmogony there were originally no heavens above nor earth below, but only a bottomless deep (*Ginungagap*), north of which was a world of mist (*Niflheim*), and south of which was the world of light or fire (*Muspelheim*). A warm wind blowing from the latter upon the ice of Niflheim melted it, and from the drops sprang Ymir, the ice giant. Ymir was fed by the cow Audhumbla, which arose in the same way. As she was one day licking blocks of ice, human hair grew out of them, and then an entire man, called Buri. His son was Bor, who had three sons, Odin, Vili and Ve, who became the rulers of heaven and earth. The children of Bor were good, those of Ymir wicked; and they were constantly at war with each other. The sons of Bor finally slew the ice giant, dragged his body into the deep, and from it created the world. Out of two trees Odin, Vili and Ve created a man, called Askur, and a woman, Embla. The earth was supported by a large ash, called Ygdrasil, whose branches extend over the world, while its top reaches above the heaven. The residence of the gods was Asgard, whence the bridge Bifröst led to the earth. The giants dwelt in Jötunheim or Utigard, and men in Midgard. As in Greek mythology there was an older and a newer dynasty of the gods. The ancient and modern systems seem to have their connecting point in Odin, as with Zeus in the Greek system. Aesir or Aser is the name for the new race of gods. They are Odin, or Woden, the god of gods, the *Alfadur* (All-father), who lives forever; from him and his wife Frigga are descended the other gods. Among their sons are Thor, god of thunder, the strongest of gods and mortals, whose hammer, Miölnir, crushes the hardest objects, and Baldur, the youthful and beautiful god of eloquence. Niord is the god of winds, of sailors, of commerce, and of riches; his son Frei is the ruler of the sun, and upon him depend rain and sunshine, plenty or dearth. Freya is the goddess of love. The mildest and most bountiful of the gods, she is a friend of sweet song, and loves to hear the prayers of mortals. Tyr, a son of Odin, the fearless god, who wounds by a look, is lofty as a fir, and brandishes the lightnings of battle. He is not properly the god of war, but rather of power and valor. His brother Braga is the god of wisdom and poetry. Braga's wife is Iduna, who preserves the apples of immortality, which she offers in vessels of gold to the heroes at their entrance into Valhalla. The Valkyrias or 'choosers of the slain' are awful and beautiful beings, neither daughters of heaven nor of hell. Mounted on swift horses, they conducted the heroes to Valhalla. Another striking figure is Loki, as beautiful as he is malignant. By the giantess Angerboda he had Hela, the goddess of the lower regions, the wolf Fenrir, and the terrible serpent of Midgard, Jormungandur, which surrounds the whole earth. Hela rules in Niflheim. All but those who die in war descend to her dark mansion. Other mythical personages were the Norns or fates, and Heimdall, who keeps watch on the bridge Bifröst. The end was to come in a final crash of doom, to be succeeded by a new heaven and earth.

Northmen, the inhabitants of ancient Scandinavia, or Norway, Sweden and Denmark, who in England were also called *Danes*. They were fierce and warlike tribes, who as early as the eighth century made piratical expeditions to all parts of the European seas, these piratical robbers being known among themselves as *vikings*. In 795 the Scandinavians established themselves in the Faröe Isles and in Orkney; towards the middle of the ninth century they founded the governments of Novgorod and of Kiev, in Russia; and after the discovery of Iceland certain powerful Norwegian families, taking refuge from the persecutions of Harold, king of Denmark, settled in that island (in 870). In the ninth century they made repeated incursions into France, and it became necessary to purchase their retreat with gold. In that country latterly bands of them settled permanently, and Charles the Simple was obliged (912) to cede to them the province afterwards called *Normandy*, and to give his daughter in marriage to Rollo, their chief. Rollo embraced the Christian religion and became the first Duke of Normandy. The course of events was somewhat similar in England. Egbert, in the beginning of the ninth century, had no sooner made some approaches towards a regular government than the Danes made their appearance. Under Alfred (871-901) they overran great parts of England, but were finally defeated, and those of them who remained in the country had to acknowledge his sway. But they returned, under his successors, in greater force, obtained possession of the northern and eastern part of the country, and in the beginning of the eleventh century three Scandinavian princes (Canute, Harold and Hardicanute) ruled successively over England. The Saxon line was then re-

stored; but in 1066 William, duke of Normandy, a descendant of Rollo, obtained the English throne, an event known as the Norman Conquest. According to the Saga narratives the Northmen were the first discoverers of America. The coasts of Spain, Italy, Greece and Asia Minor were ravaged by them, and in Byzantium the bodyguard of the emperors long consisted of Northmen known as Varangians, being recruited chiefly from those who had established themselves in Russia.

North Plainfield, a borough of Somerset Co., New Jersey. In the Plainfield County Union. Pop. 30,000.

North Polar Expeditions.

Irish navigators are supposed to have discovered Iceland about the year 800 A. D. The Norsemen continually adventured to the limits of the known world and between 870 and 1200 had discovered and explored the coasts of virtually all the land lying between Novaya Zemlya on the east and Labrador on the west, including Greenland and a considerable portion of Davis Strait and Baffin Bay. Among them Leif Ericsson is creditably reported to have landed upon the coast of Nova Scotia in the year 1000, and thus to have been the first discoverer of America. Five hundred years later, however, the work of the Norsemen had to be done again for the information of intelligent Europe, and it was not until the middle of the seventeenth century that the territory known to the Vikings had been rediscovered and brought back into the circle of general knowledge. Two great objects stimulated all Arctic exploration for hundreds of years—the attempt to find a northwest passage around America to India and the attempt to find a northeast passage around Europe and Asia to China. A practical reason for this arduous search was the fact that the Spanish and Portuguese in the time of Henry VIII held the southern seas impassable to their enemies. Accordingly Sebastian Cabot was commissioned by Henry VIII to find a northwest passage in 1508, while in 1553 Willoughby and Chancelor sailed around Norway and discovered the White Sea, opening up trade with Russia. Frobisher reported Baffin Land in 1576, and Davis in his three voyages explored Davis Strait about 1585. Henry Hudson investigated the east coast of Greenland in 1607, discovering the island of Jan Mayen, and on his last voyage found the Hudson River and then sailed into Hudson Bay, from which he never returned. Button, Baffin, Fox and James sailed through several passages west of Davis Strait and Baffin Bay, discovering land and water which bear their names between the years 1612 and 1632. Meantime the eastern passage as far as the mouth of the Ob River, and including Spitzbergen, had been explored by Borough, Brunel and Barents. By this time, when the Hudson Bay Company was incorporated, in 1670, little more had been learned than was known to the Norsemen five hundred years earlier. American exploration by land was carried on largely by the Hudson Bay Company's servants, Hearne discovering the Coppermine River in 1769–72, and Mackenzie exploring the Mackenzie River in 1789. Franklin explored 924 miles of the Arctic coast of North America between 1819 and 1826. Back traced the length of Great Fish River in 1834; Simpson, Dease and Rae completed the exploration of the rest of the Arctic shore between 1837 and 1847. Scoresby followed the east coast of Greenland; Parry in three voyages found Barrow Strait, Wellington Channel, Melville Island, Melville Peninsula, Fury and Hecla Straits between 1819 and 1823; and in 1827 reached 82° 45′ in an attempt on the Pole. Ross discovered Boothia and the Magnetic Pole and found King William Land in 1831. On the Asiatic Arctic coast, Deshnef went through Bering Strait in 1648; Chelyuskin found the most northern point of Asia in 1743, and Bering rediscovered Bering Strait in 1728, including also a considerable portion of the Alaska coast and the Aleutian Islands in 1741; Liakhoff found the New Siberia Islands in 1771; Cook sailed through Bering Strait in 1778, and Beechey went through as far as Point Barrow in 1826. The Russians in the meantime had completed tracing the Siberian coast. Franklin, in 1845, attempting to discover the northwest passage, and perishing in 1847 in King William Land, occasioned the exploration by search parties of a vast area and extent of coast line. Ross, McClintock and Austin, in 1850–51, by sledging from the eastward, and Collinson and McClure entering through Bering Strait on the west, settled the question of a northwest passage. McClure sailed eastward to Barrow Strait and was rescued by Kellett so that he and his men made the northwest passage although their ship was abandoned. Collinson came through Bering Strait and as far as the east end of Victoria Land in the same years as McClure, 1850–54. Kellet's sledges explored as far west as Prince Patrick Island in 1852–54, while

in the latter year Rae, journeying overland for the Hudson Bay Company, was told of Franklin's fate by Eskimos. Grinnell's party, and those of Kane, Hayes and Hall from 1850 to 1871 explored a large part of the coast about Smith Sound, Grinnell Land and North Greenland. The Koldewey expedition reached as far as Cape Bismarck on the east coast of Greenland in 1869–70. The Austrians, Payer and Weyprecht discovered Franz Josef Land in 1873–74. The British expedition under Nares pushed the *Alert* through the Robeson Channel and wintered in 82° 27′ on the north coast of Greenland and explored the neighborhood in the years 1875–76. A great feat was that of Nordenskiöld, who made the northeast passage in 1878–79, the *Vega* being the first vessel to sail from Europe through the Arctic and Bering Strait. Several American expeditions were noteworthy—that of Schwatka to King William Land in 1879; De Long in the ill-fated *Jeanette* in 1879–82; Berry, who surveyed Wrangell Island, and Greeley who held a meteorological station for the years 1882–83 and explored North Greenland and Grinnell Land. Peary was gaining experience in 1886 in Greenland, while Nansen crossed Greenland for the first time two years later. In 1891–92 Peary crossed Greenland at its widest point in the North. Nansen's bold drift in the *Fram* from 1893–96 from the New Siberia Islands across the Polar Ocean, when the ship reached the high latitude of 85° 55′, was a spectacular and most valuable scientific achievement, as was Nansen's long sledging journey after he left the *Fram* to reach the latitude of 86° 5′ and return to Franz Josef Land, where he was rescued by Jackson, who was exploring Franz Josef Land in 1894–97. Wellman and Fiala made further researches in the same territory. The Duke of the Abruzzi led an Italian expedition to reach the North Pole from Franz Josef Land in 1899–1900. Cagni, of his expedition, reaching 86° 34′ on a sledging journey. Andree's balloon drift from Spitzbergen resulted fatally in 1897. Sverdrup, Nansen's captain, discovered and explored Heiberg Land and Ringnes Land, west of Grinnell Land, in 1899–1903. North of Siberia, Toll lost his life on Bennett Island in 1902. The northwest passage was now achieved by Amundsen in his small boat, the *Gjöa* by entering Lancaster Sound and emerging at Bering Strait between the years 1903–06. Mylius-Erichsen mapped the northeast portion of Greenland between 1906–08 followed by Mikkelsen. Peary had spent four years, ending in 1902, in the neighborhood of Smith Sound, exploring the land and ice, and gaining experience for his Polar dash. In 1905–06 he made a sledging journey to 87.6 north; and in 1908–09 a final attempt for the Pole from Cape Columbia, the most northerly point of land then known, and reached the North Pole April 6, 1909. After this date, the possibility of major discoveries was greatly reduced. Vilkitsky found new islands north of Cape Chelyuskin in 1913; McMillan disproved the existence of the reported Crockerland, northwest of Grant Land in 1914, and Stefansson discovered new land north of Prince Patrick Island in 1915. The only large area remaining unexplored at this time was Beaufort Sea, and the region north of Alaska, in which perennial heavy ice prevented ships from reaching a high latitude.

North Pole. See *Pole.*

North Sea, or GERMAN OCEAN, a large branch of the Atlantic Ocean lying between Great Britain and the continent of Europe, having the former and the Orkney and Shetland Islands on the west; Denmark and part of Norway on the east; Strait of Dover, part of France, Belgium, Holland, and Germany on the south; and the Northern Ocean on the north. Extreme length, from the Strait of Dover to Unst, the most northern of the Shetland Isles, about 600 miles; greatest breadth, between Haddingtonshire, Scotland, and Denmark, about 400 miles; area, not less than 162,000 square miles. The North Sea is deepest on the Norwegian side, where the soundings exceed 200 fathoms; but its mean depth is not more than 31 fathoms. The bed of this sea is traversed by several enormous banks or elevations, of which the greatest is the Dogger Bank (which see). The shores of the sea are for the most part low, except in Scotland and Norway. They present numerous estuaries and other inlets, and are studded with numerous important towns, the sea being the highway for an immense maritime traffic. The fisheries, especially of herring, cod, ling, haddock, flat-fish, etc., are exceedingly valuable. The rise and fall of the tide is very great at certain places. The navigation, on account of sand-banks, winds, fogs, etc., is rather dangerous, but numerous lighthouses help to render it safer. There are many islands along the coasts of Holland, North Germany, Denmark, and Norway.

North Sea Canal (called in Holland the Amsterdam Canal), a ship canal that connects Amsterdam with the North Sea, running east and west across the narrow neck of land that unites North Holland to the

rest of the kingdom, and of great commercial value. See *Amsterdam*.

North Shields. See *Shields*.

North-star, the north polar star, the star α of the constellation Ursa Minor. It is close to the true pole, never sets, and is therefore of great importance to navigators in the northern hemisphere.

North Star, Order of, a Swedish order of knighthood, established in 1748 mainly as a recognition of scientific services.

North Sydney, a town of Cape Breton, Nova Scotia, 18 miles N. W. of Sydney. Has coal mining industries. Pop. 5418.

North Tarrytown, a village in Westchester County, New York, adjoining Tarrytown. It was settled in 1680 and incorporated in 1874. Pop. 5421.

North Tonawanda (ton-a-wân'da), a city of Niagara Co., New York, on the Niagara River and Tonawanda Creek, opposite Tonawanda. It has a good harbor and a large trade in lumber, and manufactures lumber, iron bolts and nuts, boilers and engines, chemicals, radiators, etc. Pop. 11,955.

North Toronto, a suburb of Toronto, Ontario. Pop. (1911) 5362.

Northumberland (north' um-ber-land), a northern maritime county of England, bounded south and southwest by the counties of Durham and Cumberland; east by the North Sea, and north and northwest by Scotland. Area, 2016 sq. miles. The highest hills, the Cheviots, on the northwest border, towards Scotland, are admirably suited for pasture lands, and are extensively used for feeding the breed of sheep to which they give their name. Coal-measures occupy an area of 180 square miles, and yield immense quantities of coal; lead, iron, limestone, and freestone are also wrought. Arable and stock husbandry are both prosecuted with success, and the short-horned cattle mostly reared are much prized. The chief industries include shipbuilding and rope-making; forges, foundries, iron, hardware, and machine works, chemical works, potteries, glass-works, etc. The coast abounds in cod, ling, haddock, soles, turbot and herrings. Pop. 697,014.

Northumbria (north-um'bri-a), one of the seven Saxon kingdoms of Britain, which extended from the Humber to the Forth, and was bounded on the west by the kingdoms of Strathclyde and Cumbria. It was founded by Ida, an Anglian chief, in 547, and during the eighth century it was the home of Bede, Alcuin, Egbert, and other great scholars. It was the scene of important events in English history till its final conquest by William I.

Northwestern University, founded in 1851, a co-educational institution under the auspices of the Methodist Episcopal Church. Its college of liberal arts and school of music are at Evanston, Ill., its schools of law, medicine, pharmacy, dentistry, and oratory at Chicago, and its theological department is the Garrett Biblical Institute. It had in 1914, 427 instructors, 4882 students, and a library of 184,000 volumes.

Northwest Passage, a passage for ships from the Atlantic Ocean into the Pacific by the northern coasts of the American continent, long sought for, and at last proved to exist. It was traversed by Roald Amundsen during 1903–06.

Northwest Territories, formerly that portion of northwestern Canada outside the provinces of Ontario, Quebec, Manitoba and British Columbia, originally the Hudson Bay Territory; with an area estimated at over 2,600,000 sq. miles. Regina was the seat of government. The Yukon district was separated from the territories in 1898. The southern part of the territory, divided into the districts of Assiniboia, Saskatchewan, Alberta and Athabasca, was converted in 1905 into the two provinces of Alberta and Saskatchewan. The remainder was divided into the districts of Keewatin, Ungava, Franklin and Mackenzie. In 1912 that part of the Northwest Territories east of Hudson Bay and known as Ungava was incorporated in the province of Quebec, and its name changed to New Quebec. At the same time, that part of Keewatin south of 60° N. lat. was divided between the provinces of Ontario and Manitoba. At present, therefore, the Northwest Territories consist of all of that part of Canada which is north of the parallel of 60° N. lat., and between Hudson Bay on the east and the Yukon district on the west. The Territories are administered by a commissioner assisted by a council of four members, all appointed by the governor-general-in-council. There are many lakes and rivers, the former including Slave Lake, Great Bear Lake, etc.; and the latter portions of the Laird, Slave, Coppermine and Mackenzie. Pop. (1911) 17,196. (See *Canada*.)

North Yakima (yak'i-ma), a city, seat of Yakima Co., Washington, 4 miles from Yakima. It

has many lumber and saw mills. Pop. 14,082.

Northwich (nôrth'wich), a town in Cheshire, 15 miles northeast of Chester, with numerous brine springs and extensive mines of rocksalt. Pop. 18,151.

Norton (nor'ton), CAROLINE, an English poetess and novelist, grand-daughter of Richard Brinsley Sheridan; born in 1808; died in 1877. She married in 1829 the Hon. George C. Norton; but the marriage did not prove a happy one, and from 1836 she lived apart from her husband. After the death of the latter, in 1875, she married Sir W. Stirling-Maxwell.

Norton, CHARLES ELLIOT, author, was born at Cambridge, Massachusetts, in 1827; died in 1908. He was graduated at Harvard, traveled extensively in the east, and in 1864-68 was an editor of the *North American Review*. He became professor of art history at Harvard in 1874. He wrote *The New Life of Dante, Church Building in the Middle Ages in Italy, The Divine Comedy of Dante*, etc.

Norumbega (nor-um-bē'ga), the name given to a portion of the eastern coast of North America by early explorers. It has been associated with *Norvegr* (Norway), and the section so named is presumed to have been either the Hudson River Valley or the Charles River near Watertown, Mass.

Norwalk (nor'wak), a city, county seat of Huron County, Ohio, half-way between Cleveland and Toledo, Ohio. It has railroad shops, steel mills, and manufactures of pianos, autotops and windshields, etc. Pop. 7858.

Norwalk, a city of Fairfield County, Connecticut, on Norwalk River, 14 miles S. W. of Bridgeport. It has various academic institutions and a variety of manufactures. It is a summer resort, being a convenient place of summer residence for New York merchants. Pop. 24,211.

Norway (nôr'wā; Norwegian, NORGE), a country in the north of Europe, bounded on the notheast by Russian Lapland, and east by Sweden, and washed on all other sides by the sea—by the Arctic Ocean on the north, the Atlantic and the North Sea on the northwest and west, and the Skager-Rack on the south. It is about 1080 miles in length, and its greatest breadth is about 275 miles, but towards the north it narrows so much as to be in some places not more than 20 miles; area, 124,495 square miles, or rather more than the British Isles. The country is divided into twenty prefectures, of which the capital Christiania forms one, and the city of Bergen another. Other important towns are Trondhjem, Stavanger and Drammen. Pop. 2,239,880.

Physical Features.—The coast consists chiefly of bold precipitous cliffs, and is remarkable both for the innumerable islands by which it is lined, and the bays or fiords which cut deeply into it in all directions. The surface is very mountainous, particularly in the west and north. Very commonly the mountain masses assume the form of great plateaus or tablelands, called *fjelds* or *felds*, as the Dovre Fjeld, Hardanger Fjeld, etc. The highest summits belong to the Sogne Fjeld, a congeries of elevated masses, glaciers, and snowfields in the center of the southern division of the kingdom, where rise Galdhoepig (8400 feet), the Glitretind (8384), and Skagastölstind (7879). Immense snowfields and glaciers are a feature of Norwegian scenery. The few important rivers that Norway can claim as exclusively her own have a southerly direction, and discharge themselves into the Skager-Rack; of these the chief are the Glommen (400 miles), and its affluent, the Lougen. The most important river in the north is the Tana, which forms part of the boundary between Russia and Norway, and falls into the Arctic Ocean. Lofty waterfalls are numerous. Lakes are extremely numerous, but generally small. The principal is the Miösen Vand. The prevailing rocks of Norway are gneiss and micaslate, of which all the loftier mountains are composed. The most important metals are iron, copper, silver and cobalt, all of which are worked to a limited extent. The climate of Norway is on the whole severe. The harbors on the west, however, are never blocked up with ice; but in places more inland, though much farther south, as at Christiania, this regularly happens. The forests are estimated to cover about a fifth of the whole surface, and form a very important branch of national wealth. The principal forest tree is the pine. The oak forms fine forests in the south; the birch is the most northerly tree. Only about 1000 sq. miles is under the plough. The chief cereal crop is oats. Barley ripens at 70° of latitude; rye is successfully cultivated up to 69°; oats to 68°; but wheat not beyond 64°, and that only in the most favorable seasons. Potatoes are grown with success even in the far north. The farms are generally the property of those who cultivate them, and commonly include a large stretch of mountain pasture, often 40 or 50 miles from the

main farm, to which the cattle are sent for several months in summer. The rearing of cattle is an extensive and profitable branch of rural economy. The horses are vigorous and sure-footed, but of a diminutive size; the ponies are among the best of their kind, and are often exported. The reindeer forms the principal stock in the extreme north. Among the larger wild animals are the wolf, bear, elk, deer. The fisheries of Norway are of very great value; they include the cod, herring, mackerel, salmon, shark, walrus, seal and lobster, the cod and herring fisheries being by far the most important. The rivers and lakes abound with salmon and salmon-trout, and make Norway one of the best angling countries in the world. Manufactures include cotton, woolen, flax and silk tissues. Distilleries, brickworks, saw and flour mills are numerous; and there are foundries machine works, match works, tobacco factories and sugar refineries. The export trade includes fish, timber, wood-pulp, whale and sea oil, metals, skins, feathers, furs, matches, etc. The chief imports are grain, textile goods, wool, sugar, coffee, tobacco, wine, brandy, petroleum, etc.; chief trade is with Britain and Germany: Sweden, Denmark and Russia coming next. The Norwegians are famous as sailors, and the country possesses the largest mercantile navy in Europe next to Britain. Bergen, Christiania and Trondhjem are the chief ports. The monetary system is the same as that of Denmark.

Government, People, etc.—Norway is a limited monarchy, until 1905 united with Sweden as a free and independent kingdom. The king could not nominate any but Norwegian subjects to offices under the crown. On a new succession the sovereign must be crowned King of Norway at Trondhjem. The members of the legislative assembly or Storthing are elected every three years by voters who have themselves been elected by the citizens possessing a certain qualification. It subdivides itself into two chambers—one, the Lagthing, consisting of one-fourth of the members; the other, the Odelsthing, has the remaining three-fourths. The chambers meet separately, and each nominates its own president and secretary. Every bill must originate in the Odelsthing. When carried in that body it is sent to the Lagthing, and thence to the king, whose assent makes it a law. The great body of the people are Protestants of the Lutheran confession, which is the State religion. Other sects are tolerated, although government offices are open only to members of the established church. Elementary education is free and compulsory. Besides primary schools there are numerous secondary schools. There is but one university, that of Christiania. The army is raised mainly by conscription. The nominal period of service is thirteen years, five in the line, four in the *Landvaern* (liable to be called to defend the country), and four in the *Landstorm* (for local defense). The navy comprises four iron-clads besides other vessels. The revenue in 1915 was $40,313,000; public debt $97,218,000. The people are almost entirely of Scandinavian origin.

History.—In the earliest times Norway was divided among petty kings or chiefs (*jarls*), and its people were notorious for their piratical habits. (See *Northmen.*) Harold Fair-hair (who ruled from 863 to 933) succeeded in bringing the whole country under his sway, and was succeeded by his son Eric. The latter was ultimately driven from the throne, which was seized in 938 by his brother, Hako I, who had embraced Christianity in England. Magnus the Good, the son of St. Olaf and Alfhild, an English lady of noble birth, was called to the throne in 1036; and having in 1042 succeeded also to the throne of Denmark, united both under one monarchy. (See *Denmark.*) After his death the crowns of Norway and Denmark again passed to different individuals. In 1319 the crowns of Norway and Sweden became for a short time united in the person of Magnus V. Eric of Pomerania succeeded, by separate titles, to Norway, Sweden and Denmark; and in 1397 was crowned king of the three kingdoms. Sweden afterwards for a time was a separate kingdom; but the union between Denmark and Norway was drawn closer and closer, and very much to the disadvantage of the latter, which was ultimately degraded into a mere dependency of the former. The subsequent history of Norway becomes for a long period merely a part of that of Denmark. After the defeat of Napoleon by the allies in 1813 it was arranged by the treaty of Vienna in 1814 that Denmark must cede Norway to Sweden, and the result was the union of the two countries under the Swedish crown. The union was not long unaccompanied with a certain amount of friction, partly owing to the entirely democratic character of the constitution of Norway, in which country titles of nobility were abolished early in the last century. The right claimed by the king to veto absolutely bills passed by elected representatives met with an overwhelming protest by the people, the struggle

lasting until 1905. In 1891 an election held for members of the Storthing resulted in a majority for the party which advocated the appointment of separate foreign ministers and consuls for Sweden and Norway, and at every subsequent election this majority was increased, Sweden persistently refusing to make concessions, Norway formally seceded from the union early in 1905. For a time war between the two countries seemed imminent, but Sweden consented to negotiate, and a treaty was concluded sanctioning the separation. Then the Norwegian parliament selected for king Prince Charles of Denmark, and submitted the choice to popular vote. On November 25, 1905, the new king ascended the throne. See *Hakon VII.* In 1907 a treaty providing for the integrity of Norway was signed by the representatives of Norway, Great Britain, France, Germany and Russia.

Norwich (nor'ich), borough and bishop's see of England, the seat of the county of Norfolk, on the Wensum, where it joins the Yare, 98 miles N. N. E. of London. It is a picturesque old town, and with its gardens and orchards covers a large area. The cathedral, founded in 1094, was originally in the Norman style, but now exhibits also later styles. It is a fine edifice with extensive cloisters, and a lofty tower and spire 315 feet high. The castle, a noble feudal relic, still partly surrounded by earthworks and ditch, is situated on a lofty eminence, and still surmounted by its massive donjon tower in the Norman style. St. Andrew's Hall, originally the nave of the Blackfriars' Church, the Guildhall, and the bishop's palace, also deserve mention. Manufactures, of which worsted and mixed goods are the staple, are extensive, including also mustard and starch, boot and shoe making, iron working, brewing, etc. The foundation of Norwich cannot be fixed earlier than 446. Rising to the position of capital of the Kingdom of East Anglia, it had, by the middle of the tenth century, become a large and wealthy town; but in 1002 it was laid in ashes by the Danes. Shortly after rebuilt by the Danes themselves, it had become in the eleventh century a large and populous place. In 1296 it began to send representatives to parliament. In 1328 Edward III made it a staple town for the counties of Norfolk and Suffolk, and induced great numbers of Flemings to settle in it. Pop. (1911) 191,418.

Norwich, a village, capital of Chenango County, New York, on the Chenango River, 42 miles N. E. of Binghamton. It has railroad shops, blast furnaces, a hammer factory, and other industries. Pop. 7422.

Norwich, a city, semi-capital of New London County, Connecticut, on the Thames River, 13 miles N. of New London. The falls of the river here afford extensive water power, and have served to develop the manufacturing industries, which are large and numerous, including cotton and woolen goods, paper and leather, machinery, cutlery, firearms, etc. The city was first settled in 1659. Pop. 28,219.

Norwood, a town (township), of Norfolk County, Massachusetts, 14 miles S. S. W. of Boston. It has tanneries, printing ink works and railroad repair shops. Pop. 8014.

Norwood, a village of Hamilton County, Ohio, 10 miles N. E. of Cincinnati, of which it is a suburb and post substation. It manufactures hardware and wood specialties, paper goods, cards, carriages, etc. Pop. 16,185.

Nose (nōz), the organ in man and the higher animals exercising the olfactory sense, or that of smell, and concerned through its apertures or passages in the function of respiration and in the production of voice. The bones of the nose comprise the boundaries of the nasal *fossæ* or cavities, which open in front in the nasal apertures, and behind into the pharynx or back part of the mouth. The front nostrils, or openings of the nose, are in the skeleton of an oval or heart shape, while the openings of the posterior nostrils are of a quadrilateral form. The bones which enter into the entire structure of the nose number fourteen. In addition there are certain cartilaginous pieces which assist in forming the structure of the nose, lateral cartilages on either side, and a cartilaginous septum in the middle between the two nostrils. There is also a bony septum which unites with the cartilaginous septum to form the complete partition of the nose. Several special muscles give a certain mobility to the softer parts of the organ. The nostrils and nasal cavities are lined by the mucous membrane (*pituitary* membrane) richly furnished with arteries and veins covered with a copious mucous secretion which keeps it in the moistened state favorable to the due exercise of the function of smell. The proper nerves of smell, the *olfactory* nerves, form the first pair of cerebral nerves or those which take origin from the cerebrum; while the nerves of common sensibility of the nose belong to the fifth pair of cerebral nerves. The olfactory nerves are distributed in the mucous membrane of either side in the form of a sort of

thick brush of small nerve fibers. The study of the comparative anatomy of the nasal organs shows that man possesses a sense of smell greatly inferior in many instances to that of the lower animals. The distribution of the olfactory nerves in man is of a very limited nature when compared with what obtains in such animals as the dog, sheep, etc. All vertebrates above fishes generally resemble man in the essential type of their olfactory apparatus. In most fishes the nostrils are simply shut or closed sacs, and do not communicate posteriorly with the mouth. The proboscis of the elephant exemplifies a singular elongation of the nose, in which the organ becomes modified for tactile purposes. In the seals and other diving animals the nostrils can be closed at will by sphincter muscles or valvular processes. The most frequent diseases or abnormal conditions which affect the nose comprise congenital defects, and tumors or polypi.

Nosology (nos-ol-ō'ji; from the Greek *nosos*, disease), in medicine, that science which treats of the systematic arrangement and classification of diseases, with names and definitions, according to the distinctive character of each class, order, genus and species. Many systems of nosology have been proposed at different times, but that of Dr. William Farr has been very generally adopted as practically useful. By this system all diseases are classed under the heads of (1) Zymotic Diseases, including fevers and all diseases that may be attributed to the introduction of some ferment or poisonous matter into the system; (2) Constitutional Diseases, as gout, rheumatism, cancer, scrofula, consumption, etc.; (3) Local Diseases, as diseases connected with the nerves, circulation, digestion, respiration, urinogenital system, skin, etc.; and (4) Development Diseases, as malformations, special diseases of women, diseases connected with childhood or old age, etc.

Nossi-bé (nos-sē-bā'), an island off the northwest coast of Madagascar, belonging to France. It is about 14 miles long by 8 miles broad, has a mountainous surface, and appears to be of volcanic origin. It is very fertile, and has a population of (1902) 9291. Rice, maize, manioc, and bananas are the principal products, and the sugar-cane and the coffee-plant are successfully cultivated. It has a splendid harbor.

Nossi Ibrahim, or SAINTE MARIE, an island on the east coast of Madagascar, 33 miles in length, with an average breadth of 12 miles, separated from the island of Madagascar by a channel 5 miles in width. It has been a French possession definitely since 1815. It is neither fertile nor healthy. Pop. 7654.

Nostalgia. See *Homesickness.*

Nostoc (nos'tok), a genus of green-spored gelatinous algæ, frequent especially in sandy soils and immediately after rain in summer, and vernacularly called *witches' butter*, *fallen stars*, etc. Many of the species are edible, the *N. edule* of China being a favorite ingredient in soup.

Nostradamus (nōs-tra-dā'mus), true name MICHEL DE NOSTREDAME, a French physician and astrologer, born in 1503; died in 1566. He belonged to a Jewish family. He studied first at Avignon, and afterwards at the medical school of Montpellier. After taking his degree he acted for some time as a professor, but afterwards settled as a medical practitioner at Agen, and finally, after traveling in Italy, at Salon, near Aix, about 1544, where he wrote his famous *Prophéties* or astrological predictions written in rhymed quatrains. They obtained great success, although many condemned their author as a quack. Catharine de' Medici invited him to court to cast the horoscope of her sons; the Duke of Savoy traveled to Salon for the express purpose of visiting him, and on the accession of Charles IX he was appointed royal physician. In 1550 he published an almanac containing predictions about the weather, the first of a numerous family of such productions.

Nota (nō'tà), ALBERTO, an Italian dramatic poet, born in 1755; died in 1847. Of his numerous comedies, *La Fiera*, a graphic and amusing description of manners, is perhaps the best. Many of them have been translated into French, Spanish, German, etc.

Notables (nō'ta-blz), in French history, a body consisting of noblemen, archbishops, high legal functionaries, magistrates of cities, etc., appointed and convoked from time to time by the king, as being a more pliant instrument than the states-general. The first assembly of notables of any importance was in 1558. For long there had been no meeting, but the troubles preceding the revolution led to the notables being assembled in 1787. A second meeting was held in November, 1788, to consult on the manner of assembling the States-general; but soon after everything was overturned by the revolution.

Notary (nō'ta-ri), an officer authorized to attest contracts or writings, chiefly in mercantile matters,

to make them authentic in a foreign country; to note the non-payment of foreign bills of exchange, etc. Often called a *Notary Public*.

Notation, ARITHMETICAL, ALGEBRAIC, CHEMICAL, MUSICAL. See *Arithmetic, Algebra, Chemistry, Music*.

Note (not), in music, a character which, by its place on the staff, represents a sound, and by its form determines the relative time or continuance of such sound. See *Music*.

Not Guilty, is the general issue or plea of the accused in a criminal action. When a prisoner has pleaded not guilty he is deemed to have put himself forward for trial, and the court may order a jury for the trial of such person accordingly. Should he refuse to plead the court may direct the proper officer to enter a plea of not guilty on his behalf. On an indictment for murder a man cannot plead that it was in his own defense, but must answer not guilty; the effect of which is, that it puts the prosecutor to the proof of every material fact alleged in the indictment, and it allows the prisoner to avail himself on any defensive circumstance as fully as if he had pleaded them in a specific form. In England and the United States a jury can only give a verdict either of guilty or not guilty, and the latter often really means that there is not sufficient evidence to convict. In such circumstances the verdict in Scotland would be 'not proven'; a verdict of not guilty in that country meaning that the accused is entirely innocent of the charge alleged.

Noto (nō'tō), a town of Sicily, in the province of Syracuse, on the left bank of the Noto, near its mouth in the Ionian Sea. It was a place of great strength under the Saracens, and one of the most agreeably situated and best-built towns in the island. Pop. 22,564.

Notochord (nō'tō-kord), in animal physiology, a fibro-cellular rod which is developed in the embryo of vertebrates immediately beneath the spinal cord. It is persistent in the lower vertebrates, but in the higher is replaced in the adult by the vertebræ, which are developed in its surrounding sheath. It is often spoken of as the *chorda dorsalis*.

Notornis (nō-tor'nis), a genus of grallatorial or wading birds, found inhabiting the South Island of New Zealand. It was first known to science by the discovery of fossil remains, but subsequently the genus was found to be still represented by living forms. The Notornis is most nearly allied to the Coots. It is, however, of larger size than these birds, and differs from them in the rudimentary nature of the wings.

Nototherium (not-ō-thēr'i-um), an extinct genus of marsupial or kangaroo-like animals, the fossil remains of which are found in deposits of the Upper Pliocene age in Australia. The *Nototherium Mitchelli* is a described species of this extinct genus.

Not Proven, in Scotch law, a verdict returned by a jury when there is not sufficient evidence to convict the prisoner at the bar, while there is some apparent foundation for the charge. Its practical effect is equivalent to a verdict of 'not guilty' (but with an essential difference—see *Not Guilty*), and the accused cannot be tried afterwards for the same offense.

Notre Dame (nō-tr dàm; French, 'Our Lady'), a title of the Virgin Mary, is the name of many churches in France, and particularly of the great cathedral at Paris, which was founded in the twelfth century, and forms a prominent object in the city.

Nottingham (not'ing-am), a town near the middle of England, capital of the county of same name, on the Leen, near its junction with the Trent, 110 miles northwest of London. It occupies a picturesque sight overlooking the Vale of Trent, and has one of the finest and largest market places in the kingdom. The castle, which crowns the summit of a rock, rising 133 feet above the level of the Leen, was originally built by William the Conqueror as a means of overawing the outlaws frequenting the recesses of Sherwood Forest. Dismantled during the Protectorate, it subsequently became the property of the Duke of Newcastle, who in 1674 erected a large mansion on part of the site. This, after being partly burned in riots connected with the reform movement in 1831, now contains the Midland Counties Art Museum, free library, etc. The principal educational and literary institutions are the University College and Technical School, high-school for boys, the Blue-coat School, the school of art, the People's Hall, and the Mechanics' Institute. An arboretum covering 18 acres is a feature of the town. The staple manufactures are hosiery and lace, the latter being a sort of specialty. There are also manufactures of cotton, woolen, and silk goods, and of articles in malleable and cast-iron. Nottingham was a place of importance in Anglo-Saxon times, and was twice or thrice taken by the Danes. Charles I raised his standard here in 1642, and next year the town and castle were taken by the Parliamentar

tana. Serious riots, occasioned by the introduction of machinery, took place in 1811-12 and 1816-17. Pop. 259,942.—NOTTINGHAMSHIRE, also called NOTTS, is an inland county, bounded north by York, east by Lincoln, south by Leicester, and west by Derby. Area, 826 sq. miles. The general surface, with exception of the Vale of Trent, is undulating. The principal river is the Trent, with its affluents, the Soar and Idle. The greater portion of its area is composed of rocks of the Permian and New Red Sandstone systems. The chief mineral is coal. The soil is generally extremely fertile. The crops usually cultivated are wheat, rye, barley, oats, beans and peas. The manufactures include lace, hosiery, machinery, silk and cotton spinning, bleaching, coal-mining, iron and brass founding, glove-making, etc. Pop. 604,077.

Nottingham, HENNAGE FINCH, FIRST EARL OF, was the son of Heneage Finch, recorder of the city of London, and was born in 1621; died in 1682. He was an ardent royalist, was called to the bar in 1645, and at the Restoration was appointed solicitor-general, in which capacity he signalized his zeal in the prosecution of the regicides. In 1661 he was elected member for the University of Oxford, and obtained a baronetcy, and six years afterwards took a prominent part in the impeachment of the Earl of Clarendon. In 1670 he became attorney-general, and in 1675 he obtained the chancellorship. In 1681 his services were rewarded with the earldom of Nottingham. Dryden has handed down to posterity his portrait in *Absalom and Achitophel*, under the character of *Amri*.

Notturna. See *Nocturne*.

Noukha. See *Nucha*.

Nouméa (nō-mā'ä; also called PORT DE FRANCE), is the chief settlement in the French penal colony of New Caledonia (which see). Pop., besides convicts and soldiers, 6968.

Noumenon (nou'me-non; pl. NOUMENA), in Kant's philosophy, an object conceived by the understanding or thought of by the reason, as opposed to a *phenomenon*, or an object such as we represent it to ourselves by the impression which it makes on our senses. The *noumenon* is an object in itself, not relatively to us.

Noun (from the Latin *nomen*, name), in grammar, a word that denotes any object of which we speak, whether that object is animate or inanimate, material or immaterial. Nouns are called *proper* or *meaningless* when they are the names of individual persons or things, as George, Berlin, Orion; *common*, when they are the name of a class of things, as book, page, ball, idea, emotion; *collective*, when they are the names of aggregates, as fleet, army, flock, covey, herd; *material*, when they are the names of materials or substances, as gold, snow, water; *abstract*, when they are the names of qualities, as beauty, virtue, grace, energy. Some of the older grammarians included both the noun and the adjective under the term *noun*, distinguishing the former as *noun-substantive* and the latter as *noun-adjective*.

Noureddin Mahmoud, MALEK-AL-ADEL, one of the most distinguished of the Moslem rulers of Syria, succeeded his father as emir of Aleppo in 1145. On attaining power he proceeded to grapple with the Christians, and inflicted a disastrous defeat upon them under the walls of Edessa, taking that city by storm. This disaster to the Christian arms occasioned the second crusade. Noureddin now attempted to expel the Christians from Palestine, and before 1151 all the Christian strongholds in Syria were in his possession. An illness, however, which prostrated him in 1159, enabled the Christians to recover some of their losses; and when well enough to take the field he suffered defeat at the hands of Baldwin, king of Jerusalem. Afterwards, however, he overthrew the Christian princes of Tripolis and Antioch, making prisoners of them both. Subsequently Noureddin overran Egypt, and was invested with the governorship of that country and of Syria. He died at the height of his success in 1174.

Novalis (nō-vāl'is). See *Hardenberg, Friedrich von*.

Novara (nō-vä'ra), a town of Northern Italy, capital of province of same name, beautifully situated between the Agogna and Terdoppia, 53 miles E. N. E. of Turin. Its rice and grain markets are the most important in Piedmont. Novara is famous for the battle fought there on March 23, 1849, between the Sardinians and Austrians, in which the former were completely defeated, and Charles Albert induced in consequence to abdicate in favor of his son Victor Emmanuel. Pop. 64,571.

Nova Scotia (nō'vä sko'shi-ä), a province of the Dominion of Canada, consisting of a peninsular portion properly called Nova Scotia, and the Island of Cape Breton, which is separated from the mainland by the Strait or Gut of Canso. It is bounded on the

north by Northumberland Strait and the Gulf of St. Lawrence; northeast, south, and southeast by the Atlantic; west by the Bay of Fundy; and north by New Brunswick, with which it is connected by an isthmus only 11 miles broad (traversed by a ship railway); area, 20,907 square miles. Of the whole about 5,000,000 acres are fit for tillage. The southeastern coast is remarkable for the number and capacity of its harbors. There are no mountains of magnitude, but ranges of hills traverse the peninsula on the northwest side. There are a number of lakes, but no streams of great size. The forests are extensive and valuable. There is much beautiful scenery, and the climate is the most equable in Canada. The wild animals include bear, foxes, moose, caribou, otter, mink, etc., and excellent sport may be had. The minerals are also valuable. Granite, trap, and clay-slate rocks predominate. Coal, with iron in combination, abounds in many places, and more than 1,500,000 tons are raised annually. Gold is also found, and is being worked. Copper ore exists, as also silver, lead, and tin; gypsum is plentiful. Petroleum has been recently discovered, and wells have been sunk in Cape Breton. Wheat, potatoes, and oats are important crops; and buckwheat, rye, barley, Indian corn, and field peas are extensively cultivated. Great quantities of hay are made, and a good deal is exported. The apple orchards of the western counties are very productive, and extend along the highway in an unbroken line for 80 miles. Apples are exported in great numbers. Cattle and sheep are raised and exported both to New Brunswick and Newfoundland. There are extensive fisheries of cod, haddock, mackerel, herrings, etc. The manufactures are comparatively unimportant, but considerable capital is invested in saw mills, flour mills, shipbuilding, tanning, etc. The foreign trade is comparatively large, more shipping being owned in proportion to population than in any other country. The imports consist principally of British and American manufactures; spirits, sugar, wines, coffee, etc. The principal articles of export are fish, timber, and coal. Education is widely diffused. There are four degree-conferring colleges or universities. The public affairs of the colony are administered by a lieutenant-governor, council, and house of assembly. The laws are dispensed by a supreme court and district courts as in Canada. Halifax, the capital, possesses one of the finest harbors in America. The province is well provided with railways and steamship service, and is frequented by summer tourists.

Nova Scotia was visited by the Cabots in 1497, and was first colonized in 1604, when French settlements were made at Port Royal, St. Croix, etc. Under the French Nova Scotia (with New Brunswick) was known as Acadia or Acadie. The French colonists were more than once almost entirely driven out by the English. In 1621 Sir William Alexander obtained from James I a grant of the country, but his attempt to colonize it proved a failure. In 1654 Cromwell took possession of the country, which remained with the English till 1667, when it was ceded to France. But in 1713 the country was again ceded to England. Its population was largely French, and in 1755, during the French and Indian war, thousands of them were forcibly removed from the country on the accusation of hostility to the English. In 1763 the island of Cape Breton was annexed to Nova Scotia, though separated from 1784 to 1820. In 1784 New Brunswick was detached. In 1867 the province became a member of the Dominion of Canada. Pop. (1911) 492,338.

Novatians (nō-vā'shanz), in church history, a sect founded in the middle of the third century by Novatianus of Rome and Novatus of Carthage, who held that the lapsed might not be received again into communion with the church, and that second marriages are unlawful. Novatianus is said to have suffered martyrdom about 255 A.D. Several writings of his remain.

Nova Zembla (nō'va zem'blä; Russian, *Novaia Zemlia*), two large islands in the Arctic Ocean, belonging to Russia, and lying north from the northeastern corner of European Russia, separated from each other by the narrow strait Matotchk in Shar; length, 635 miles; breadth, 170 miles. The coasts swarm with seals, fish, and water-fowl. The interior is covered with stunted shrubs, short grass, and moss, and is frequented by reindeer, white bears, ermines and Arctic foxes. It has no permanent inhabitants, but is visited by Russian hunters and fishers.

Novel (nov'el), a prose narrative of fictitious events connected by a plot, and involving portraitures of character and descriptions of scenery. In its present signification the term novel seems to express a species of fictitious narrative somewhat different from a *romance*, yet it would be difficult to assign the exact distinction, though the former is generally applied to narratives of everyday life and manners; while the romance deals with what is ideal, marvelous, mysterious, or supernatural. Prose fiction

written for entertainment is of considerable antiquity. Among the Greeks we find mention of a collection of stories known as the *Milesian Tales*, before which a sort of historical romance, the *Cyropædia*, had been produced by Xenophon (445-359 B.C.). There were several other Greek writers of fiction before the Christian era, but the most notable name is that of Heliodorus (which see) in the fourth century after Christ. He was followed by Achilles Tatius, Longus, and other writers of fiction. Among the Romans the chief names are Petronius Arbiter and Appuleius. The romances of the middle ages were largely metrical in form (see *Romance*), and prose fiction, as we at present understand it, is of comparatively modern growth. It had its early beginnings in the stories of Boccaccio, contained in his *Decameron* (1358). The success of this collection gave rise to numerous imitations, and since that time the development of the novel has been steadily progressive. At first we have nothing but tales of love-intrigue, as in the *Decameron*, in the *Cent Nouvelles Nouvelles* (fifteenth century), and the *Heptameron* of Margaret of Navarre (1559). But during the sixteenth and seventeenth centuries there is very marked progress, writers beginning very materially to enlarge and vary their sphere; and we now find produced the comic romance, the *picaresque* romance, or romance of amusing roguery, and the pastoral romance. The first variety is worthily represented by the *Gargantua and Pantagruel* of Rabelais (died 1553). Next in point of data comes the *Vita di Bertoldo* of Julio Cesare Croce, a narrative of the humorous and successful exploits of a clever peasant, which was as popular for two centuries in Italy as *Robinson Crusoe* in England. Some years after appeared the *Don Quixote* of Cervantes (1605), which gave the death-blow to the romance of chivalry. About the same time the first of the *picaresque* romances was given to the Spanish public. In this branch Matteo Aleman gives us in *Guzman Alfarache* a hero who is successively beggar, swindler, student, and galley slave. It gave birth to a host of similar romances, and is said to have suggested to Le Sage the idea of *Gil Blas*. The *Arcadia* of Sir Philip Sydney blends pastoral with chivalrous manners, and marks the transition to the romances of conventional love and metaphysical gallantry. In the seventeenth century prose fiction in most of its leading types had become an established form of literature in the principal languages of Europe. The full-fledged modern English novel may be said to date from Defoe. The effect of his *Robinson Cr*[illegible], *Colonel Jack*, *Moll Flanders*, etc., i[illegible] caused by the delineation and skilful combination of practical details, which give to the adventures the force of realities. The novel of everyday life and character drawing owes its first real introduction in England to the era of Richardson, Fielding and Smollett, of whom Richardson and Fielding were the most original and still rank among the masters of English fiction. The *Tristram Shandy* of Sterne displays admirable character painting, and humor deeper and finer in quality than that of his contemporaries, but can hardly be said to have any plot. Next appeared Goldsmith's *Vicar of Wakefield*, which possesses a higher moral tone than any that had preceded it. Among the best works of secondary rank may be mentioned Johnson's *Rasselas*, Walpole's *Castle of Otranto*, Madame D'Arblay's *Evelina*, and Beckford's *Vathek*. Ranking below these are the novels or romances of horrors, represented by the *Mysteries of Udolpho* and others by Mrs. Radcliffe, M. G. Lewis' *Monk*, and Maturin's *Montorio*. A return to stricter realism was manifested in Miss Edgeworth and Miss Austen, who describe domestic life with minuteness, good sense, a clear moral aim, and charming simplicity of style. In France, among the novels treating of social life in the eighteenth century the most prominent are the *Vie de Mariamne* and the *Paysan Parvenu* of Marivaux, *Manon Lescaut*, by the Abbé Prévot, the *Nouvelle Héloïse*, and the *Emile* of Rousseau, containing the author's theories of love, education, religion and society. In the department of humorous and satirical fiction the palm belongs to Le Sage, author of *Gil Blas*, the *Diable Boiteux*, etc. As a writer of satirical fiction Voltaire is entitled to high rank by his *Candide*, *Zadig*, *Princesse de Babylone*, etc. The translation of the *Arabian Nights' Entertainments* by Galland (1704-17) revived the taste for the exaggerations of eastern fiction, and brought a variety of works into the field teeming with genii, magicians, caliphs, sultans, princesses, eunuchs, slaves, etc. In Germany three great names tower above all others—*Wieland*; *Jean Paul Richter*, whose works abound in strokes of humor, pathos, and fancy; and *Goethe*, whose novels are attempts to represent or solve the great problems of life and destiny. Popular romantic legendary tales (*Volksmärchen*) constitute a special department of German literature, which was successfully cultivated by Ludwig, Tieck, De la Motte Fouqué, Chamisso, Clemens Brentano, Zschokke, Hoffmann, Musäus, and others.

In entering upon the present epoch of the novel we meet with the name of the author of *Waverley*. Sir Walter Scott introduced a new era in the history of English fiction, and may be said to have created the modern historical novel. Since his day the British novelists are perhaps the most numerous class in the list of authors; and among the more prominent we may note Galt, Lady Morgan, Charles Lever, Mrs. Gore, Theodore Hook, Disraeli, Bulwer-Lytton, Dickens, Thackeray, James, Ainsworth, the sisters Brontë, Mrs. Trollope, Anthony Trollope, Mrs. Craik, Kingsley, Marryat, George Eliot, Wilkie Collins, Miss Braddon, Mrs. Oliphant, Miss Thackeray, Miss Yonge, Thomas Hughes, Charles Reade, William Black, Thomas Hardy, Richard Blackmore, Walter Besant, W. E. Norris, James Payn, Clark Russell, Christie Murray, Rider Haggard, R. L. Stevenson, George Meredith, Hope and F. Anstey; besides whom there are a number of clever rising men. In the United States it was not till after the revolution that the earliest attempts in prose fiction were made. The first notable adventurer in this field was Charles Brockden Brown, who was followed by J. Fenimore Cooper, Washington Irving, Edgar A. Poe, Nathaniel Hawthorne, Harriet Beecher Stowe and Oliver Wendell Holmes. After these come a younger, and in some respects a more markedly American school, represented by such names as Bret Harte, Henry James, Crawford, Howells, Cable, and various others of still more recent date. The most celebrated of the French novelists of the nineteenth century are Madame de Staël, Châteaubriand, Victor Hugo, Dumas (father and son), Balzac, Alphonse Karr, Georges Sand, Feuillet, Prosper Mérimée, Edmond About, Erckmann-Chatrian, Zola, Daudet, etc. The more noteworthy names in the German literature of fiction are those of Gutzkow, Willibald Alexis (Wilhelm Häring), Hackländer, Spielhagen, Gottfried and Johanna Kinkel, Auerbach, Rodenberg, G. zu Putlitz, Gustav Freytag, Paul Heyse, Georg Ebers, Rosegger, and others. Among the most important novels in other languages are those in the Italian by Manzoni, in Danish by Hans Christian Andersen, in Swedish by Frederika Bremer and Madame Carlen, in Norwegian by Björson and Ibsen, in Hungarian by Maurice Jokai, and in Russian by Ivan Tourguenieff and Tolstoi.

Novels, in the civil law, are the supplementary constitutions of some Roman emperors so called because they appeared after the authentic publications of law made by these emperors.

November (nō-vem'ber; from L. *novem*, nine), formerly the ninth month of the year, but according to the Julian arrangement, in which the year begins on January 1, November became the eleventh month, and comprised 30 days. See *Calendar*.

Novgorod (nov'gō-rōt), or VELIKI-NOVGOROD (*Great Novgorod*), a town of Russia, capital of the government of same name, on the Volkhov, near the point where it issues from Lake Ilmen, 103 miles S. S. E. of St. Petersburg. It was during the middle ages the largest and most important town of

Church at Novgorod.

Northern Europe. It is divided into two parts by the river, the Kreml or citadel and the trading town. The former contains the cathedral of St. Sophia, built after the model of St. Sophia at Constantinople; besides which there are numerous churches and several monasteries. Novgorod was the cradle of the Russian monarchy, and a monument was erected in 1864 to commemorate the thousandth anniversary of the foundation of the Russian State by Rurik. The trade and manufactures are now unimportant. Pop. 26,972.—The government has an area of 47,236 square miles. It is generally flat, a considerable portion of it being covered with lakes and marshes. The low range of the Valdai Hills enter it in the S. W. and form the principal watershed separating the basin of the Baltic from that of the Volga. The lakes are numerous.

and three of them of great extent—Vcaje, Bielo-Osero, and Ilmen. A great part of the surface is covered by forests. The principal crops are rye, barley, oats, flax and hemp. Pop. 1,391,933.

Novi-Bazar (nō'vē-bä-zar'), a town of Bosnia, on the Rashka, a tributary of the Morava, 130 miles S. E. of Bosna-Serai. It has important fairs, and is in a position of strategic importance. Pop. 12,000.

Novice (nov'is) a candidate of either sex for a religious order; the *novitiate* being the time in which the novice makes trial of a monastic life before taking the final vows. The term of probation is at least one year, and may extend to two or three. The order is not bound to receive a novice at the end of his novitiate, neither can a novice be hindered to leave the order when the term of novitiate is expired. The age for commencing a monastic life is fixed by the Council of Trent at sixteen years.

Novikoff (nov'-e-kof), NICHOLAI IVANOVITCH, a Russian author, born near Moscow in 1744; died in 1818. He was for a time in the imperial service, but settling in Moscow he became editor of the *Moscow Gazette*, and founded the first circulating library in Russia. He published the *Old Russian Library*, a collection of historical documents; *Russian Biographies;* a *History of the Jesuits* (for which he was imprisoned), etc.

Novi Ligure (nō'vē-lē-gō'rā), a town of North Italy, province of Alessandria, 24 miles N. N. W. of Genoa. It was the scene of a French defeat in 1799. Pop. 17,868.

Novo-Moskovsk (nō-vō-mäs-kovsk'), a town of Russia, government of Ekaterinoslaff, on right bank of the Samara. It has important horse and cattle fairs, tanneries, etc. Pop. 23,381.

Novo-Tcherkask (chir'kask; New Tcherkask), the chief town of the country of the Don Cossacks, in S. Russia, on the Aksai, a tributary of the Don, 40 miles from the Sea of Azov. It was founded in 1805, when the inhabitants had to remove from Old Tcherkask, on the banks of the Don, on account of inundations. It is a thriving place with a considerable trade, but the manufactures are unimportant. Pop. (1913) 67,000.

Novo-Zybkov (zip'kōf), a town of Western Russia, province Tchernigov. Pop. 11,924.

Novum Organum (nō'vum or'gan-um; 'new instrument'), the second part of Bacon's great projected work the *Instauratio Magna*, published in 1620. It is written in Latin, and along with the *Advancement of Learning* forms the foundation of the inductive or Baconian system of philosophy.

Noyades (nwä-yäd; French, from *noyer*, to drown), the name given to the execution of political prisoners by drowning them, practiced during the French revolution, especially by Carrier at Nantes. One method adopted was that of crowding the victims into a boat, withdrawing a plug in the bottom, and casting them adrift in the deep water of a stream.

Noyeau (nwä-yō'), a cordial or liqueur of various compositions, but generally prepared from white brandy.

Noyes (noiz), ALFRED, an English poet, born in Staffordshire, September 16, 1880. He has contributed poems to various English and American periodicals, and has lectured on poetry and peace. His publications include *Collected Poems* (1910), *William Morris* (English Men of Letter Series, 1908), etc.

Noyes JOHN HUMPHREY, a religious leader, born at Brattleboro, Vermont, in 1811; died in 1886. He graduated at Dartmouth College in 1830; first studied law, and afterward divinity, at Andover and New Haven. In 1838 he founded a community of Perfectionists near Putney, Vermont, in 1847, one at Oneida, New York. He published *The Second Coming of Christ*, *History of American Socialism*, *The Way of Holiness*, *Home Talks*, etc.

Noyon (nwä'yōn), a town of northeastern France, in the department of Oise, on the Verse, near the Oise, 44 miles E. N. E. of Beauvais, and 59 miles N. E. of Paris. It is an ancient place, and has a cathedral begun in the twelfth and completed early in the thirteenth century. It was known in early times as Noviodunum Veromanduorum. The chief industries are sugar refining and the manufacture of laces, cloth, leather and chemicals. John Calvin, the famous theologian, was born here in 1509.

Noyon was the scene of bitter fighting during the European war which began in 1914. It was overrun by the Germans in their initial advance in the first year of war and held by them till the spring of 1917, when the Allies forced the Teutons to retire from their positions on the long front from Arras to Soissons. On March 17 the last troops left Noyon and the French entered what was left of the town on the following day. Noyon remained in the hands of the French till March, 1918, when the Germans began their long-

heralded great offensive on a fifty-mile front from the River Oise, near La Fere, to Arras. The attack began on March 21, and the Germans were again in possession of Noyon by March 27. In and around the town were many exquisite examples of French architecture of the Renaissance. These were destroyed by the retreating Germans in 1917. The ancient cathedral was spared, though badly battered by shells. Pop. 7277.

Nubeculæ. Same as *Magellanic Clouds.*

Nubia (nū'bi-a), a name given, in a more or less restricted sense, to the countries of Northeastern Africa, bounded north by Egypt, east by the Red Sea, south by Abyssinia, Senaar and Kordofan, and west by the Libyan Desert. With the exception of the valley of the Nile the country is generally desert. From 1822 to the revolt of the Mahdi in 1883 the country was subject to Egypt. Then, until 1898, it acknowledged the sway of the Mahdi and his successor. The victory of Kitchener in that year restored the dominion to Egypt. Suakin or Sauakin, on the Red Sea, is the only practicable port. Khartum is the most important inland town. Remains of ancient edifices occur throughout the whole extent, but chiefly below Dongola. The Nubians belong to the Arabian and Ethiopian races, who converge in the Nile basin; they are a handsome race, of dark-brown complexion, bold, frank, cheerful, and more simple and incorrupt in manners than their neighbors either up or down the river. Their language comprises various dialects of the Negro speech of Kordofan. See *Egypt, Soudan.*

Nuble (nyō'blā), an inland province of Chile, watered by the Nuble and other streams; area, 3555 square miles. This province is noted for its fine climate and fertility. Pop. about 160,000.

Nucha, or NUKHA (nō-hä'), a town of Russia, in the Caucasian government of Elizabethpol, 120 miles E. S. E. from Tiflis. It contains a fortress and palace built by Hosein Khan in 1765, and was up to 1864 a very important sericultural center. Pop. 24,811.

Nucleus, NUCLE'OLUS. See *Cell.*

Nuddea. See *Nadiyá.*

Nudibranchiata (nū-di-bran-ki-ā'-ta) the section of 'Naked-gilled' Molluscs belonging to the class of Gasteropods. They have no shells in their adult state, and the gills are completely exposed, existing for the most part as branched or aborescent structures on the back or sides of the body. The sea-lemons, sea-slugs, etc., are examples.

Nuevo Leon. See *New Leon.*

Nuggina. See *Nagina.*

Nuisance (nū'sans), a legal term used to denote whatever incommodes or annoys; anything that produces inconvenience or damage. Nuisances are defined of two kinds—*public* or *common* and *private.* Public nuisances are annoyances in the highways, bridges and public rivers; injurious and offensive trades and manufactures, which, when hurtful to individuals, are actionable, and when detrimental to public health or convenience, punishable by public prosecution, and subject to fine according to the nature of the offense. A private nuisance may be defined as an injury or annoyance to the person or property of an individual, and not amounting to a trespass, as where one projects the eaves of his house over those of his neighbor, or stops or obstructs a right of way. Whatever obstructs passage along the public ways, or whatever is intolerably offensive to individuals in their homes, constitutes a nuisance. Causing inconvenience to one's neighbors may not in itself be a nuisance at law; there must be positive discomfort or danger. It is a nuisance if a neighbor sets up and exercises any offensive trade, or keeps noisome animals near the house of another. Nuisance, whether private or public, is rather an injurious than a criminal act. The remedy at law for the injury of nuisance is by action of trespass on the cause, in which the party injured may recover a satisfaction in damages for the injury sustained. The party aggrieved has also the right to abate the nuisance by his own act; that is, he may take away or remove it, provided he commits no riot in so doing, nor occasions (in cases of private nuisance) any damage beyond what the removal of the inconvenience necessarily requires. Says Blackstone: 'The reason the law allows this summary method is because injuries of this kind require an immediate remedy, and cannot wait for the slow progress of justice.'

Nudibranchiata—*Edlis oliacea.*

Nukha (nō-kä'). See *Nucha*.

Nullification (nul-i-fi-kā'shun), a rendering void and of no effect, or of no legal effect; in American politics it indicates the doctrine of the extreme States' rights party, first propounded by Calhoun in 1828. He asserted the right of any state to declare the unconstitutionality of any federal law, and the right to withdraw from the Union should such law be enforced. An effort to put this doctrine into effect was made in 1832, by a South Carolina convention, which declared the tariff bill just enacted null and void, forbade the collection of duties within the state, and threatened to secede from the Union if an effort was made to enforce the law. President Jackson, by prompt and resolute action, checked this movement, but a compromise tariff bill was soon after passed to remove the cause of dispute.

Nullipore (nul'i-pōr), a name given to certain beautiful little plants of the genus *Melobesia*, common on coral islands. From secreting lime on their surface, and hence resembling coral, they were formerly supposed to be a kind of zoöphytes.

Numantia (nū-man'shi-ä), an ancient town of Spain, the site of which is near the town of Soria, in Old Castile. It had great natural strength, and is celebrated for its desperate resistance to the Roman power, especially in the siege by Scipio Africanus in B.C. 134-133, when it had to surrender, though most of its defenders then surviving put themselves to a voluntary death. The town was destroyed by the conqueror.

Numa Pompilius (nū'ma pom-pil'i-us), the second king of Rome, who is said to have reigned from 714 to 672 B.C. He was of Sabine origin, and was distinguished as a philosopher and legislator, though, like the other early kings, he has more a legendary than an historical existence. He was regarded as the founder of the most important religious institution of the Romans, and left writings explanatory of his system, which were burnt by order of the senate, when accidentally discovered 400 years after his time.

Number (num'bèr), a single unit considered as part of a series, or two or more of such units. An *abstract number* is a unit or assemblage of units considered independently of any thing or things that they might otherwise be supposed to represent. For example, 5 is an *abstract number* while it remains independent; but if we say 5 feet or 5 miles it becomes a *concrete number*. *Cardinal numbers* are numbers which answer the question, 'How many?' as one, two, three, etc., in distinction from *first*, *second*, *third*, etc., which are called *ordinal numbers*. A *prime number* is a number which can be divided exactly by no number except itself and unity. A number is *even* when it is divisible by two, otherwise it is *odd*. See *Arithmetic*.

Number, in grammar, that distinctive form which a word assumes according as it is spoken of or expresses one individual or several individuals. The form which denotes one or an individual is the *singular number*; the form that is set apart for two individuals in some languages (as in Greek and Sanskrit) is the *dual number*; while that which refers indifferently to two or more individuals or units constitutes the *plural number*.

Numbering-machine, a machine for impressing consecutive numbers on account books, coupons, railway tickets, bank notes, etc. One of the principal forms of the apparatus consists of discs or wheels decimally numbered on their peripheries, the whole mounted on one axle, upon which they turn freely, acting upon each other in serial order. The first wheel of the series, containing the units, is moved one figure between each impact, and when the units are exhausted the tens come into action and act in coincidence with the units; so on of the hundreds, thousands, etc.

Numbers, Book of, the fourth of the books of the Pentateuch. It takes its name from the records which it contains of the two enumerations of the Israelites, the first given in chaps. 1-4, and the second in chap. xxvi. It contains a narrative of the journeyings of the Israelites from the time of their leaving Sinai to their arrival at the plains of Moab, and portions of the Mosaic Law. Formerly the authorship was implicitly attributed to Moses, but some modern scholars resolve the book into various parts, to each of which is assigned a separate author. See *Pentateuch*.

Numeral (nū'mér-al), a figure or character used to express a number; as the Arabic numerals, 1, 2, 3, etc., or the Roman numerals, I, V, X, L, C, D, M, etc. See *Arithmetic*.

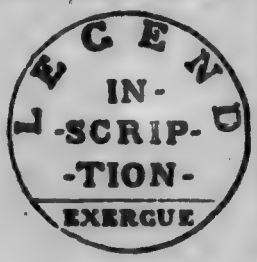
Numeration (nū-mèr-ä'shun), the art of expressing in characters any number proposed in words, or of expressing in words any number proposed in characters. The chief terms used for this purpose are the names of the digits from *one* to *ten*, a *hundred*, a *thousand*, a *million*, etc. The term *billion* is of uncertain use; in Britain it is a mil-

lion of millions; in France, America, etc., a thousand millions.

Numidia (nû-mid'i-ä), an ancient country of North Africa, corresponding roughly with modern Algeria. It was divided among various tribes, but after the second Punic war it was united under Massinissa, and several of its rulers became noted in Roman history. In B.C. 46 it became a Roman province.

Numidian Crane. See *Demoiselle.*

Numismatics (nû-mis-mat'iks), or NUMASMATOLOGY, the science of coins and medals, the study of which forms a valuable and important adjunct to that of history. The word *coin* is in modern times applied to those pieces of metal struck for the purpose of circulation as money; while the word *medal* signifies pieces of metal similar to coins not intended for circulation as money, but struck and distributed in commemoration of some person or event. Ancient coins, however, are often termed *medals.* They are of gold, silver, bronze, electrum, or billon, and in ancient times served not only for the purpose of a currency, but as chronicles of political events, and abstracts of the times. It is also from coins alone that we derive our knowledge of some of the most celebrated works of ancient art, particularly of ancient statuary. The parts of a coin or medal are: the *obverse* or *face* containing generally the head, bust, or figure of the sovereign or person in whose honor the medal was struck, or some emblematic figure relating to him; and the *reverse,* containing various figures or words. The words around the border form the *legend,* those in the middle or field the *inscription.* The lower part of the coin, separated by a line from the figures or the inscription, is the *basis* or *exergue,* and contains the date, the place where the coin was struck, etc. Coins are usually arranged in three grand classes: Greek and Roman coins, mediæval and modern European coins, and Oriental coins. Greek coins are again classed in three divisions: (1) civic coins, and regal without portraits; (2) regal coins bearing portraits; (3) Græco-Roman coins. Roman coins are divided into (1) republican, (2) imperial. In ancient, as in modern times, while the coins of empires or kingdoms were (at least in later times) distinguished by the head of the reigning prince, those of free states were distinguished by some symbol. Thus, Egypt was distinguished by a sistrum, an ibis, a crocodile, or a hippopotamus; Arabia by a camel; Africa by an elephant; Athens by an owl; Syracuse and Corinth by a winged horse. There were also a number of symbols having a general signification. Thus, a patera signified a libation, and indicated the divine character of the person holding it in his hand; the shaft of a spear denoted sovereign power; an ensign on an altar, a new Roman colony; and so forth. Mediæval coins include the Byzantine, the coins of the various European states from the fall of Rome to the accession of Charlemagne; the Carlovingian currency from Charlemagne to the fall of the Swabian house (1268); early Renaissance to 1450; and classical Renaissance from then till 1600. Modern coins are classed geographically and chronologically. Oriental coins are those of Ancient Persia, Arabia, Modern Persia, India, China, etc.



Nummulite (num'û-lit; Latin, *nummus,* money; Greek, *lithos,* stone), a name common to the members of an extensive class of fossil polythalamous foraminifera, having externally somewhat the appearance of a piece of money (hence their name), without any apparent opening, and internally a spiral cavity divided by partitions into numerous chambers communicating with each other by means of small openings. They vary in size from less than ⅛ inch to 1½ inch or more in diameter. Nummulites occupy an important place in geology, on account of the prodigious extent to which they are accumulated in the lower tertiary (Eocene) strata. They are often piled on each other nearly in as close contact as the grains in a heap of corn. They occur so abundantly in some parts of the Eocene formation that the name of *nummulitic* limestone is given to

Nummulites.

the strata so characterised. This series is characteristic of the Eastern Hemisphere, often attains a thickness of several thousand feet, and extends from the western shores of Europe and Africa through Asia to the east of China. The pyramids of Egypt are constructed of a stone largely composed of nummulites.

Nun, a word of unknown origin, but supposed to be connected with a Coptic word signifying 'pure,' applied in the Roman Catholic Church to a female who retires from the world, joins a religious sisterhood, takes upon herself the vow of chastity and the other vows required by the discipline of her convent, and consecrates herself to a life of religious devotion. Nearly all the masculine orders or rules had corresponding feminine institutions, while there were also numerous independent orders of nuns. At present the number of nuns is largely in excess of that of monks. The first nunnery is said to have been that founded by a sister of St. Anthony about A.D. 270; and the first in England was founded at Folkestone by Eadbald, king of Kent, in 630.

Nun, one of the mouths of the river Niger.

Nunc Dimittis ('now thou lettest depart'), the first two words of the Latin version of the canticle of Simeon given in Luke ii. 29-32, and used as the designation of the whole canticle, which forms part of the evening service in the Book of Common Prayer.

Nuncio (nun'shi-ō), an ambassador of the first rank (not a cardinal) representing the pope at the court of a sovereign entitled to that distinction. A papal ambassador of the first rank, who is at the same time a cardinal, is called a legate. The title of *internuncio* is given to an ambassador of inferior rank, who represents the pope at minor courts. Formerly the papal nuncios exercised the supreme spiritual jurisdiction in their respective districts. But now, in those Catholic kingdoms and states which hold themselves independent of the court of Rome in matters of discipline, the nuncio is simply an ambassador.

Nuncupative Will, one made by the verbal declaration of the testator, and depending merely on oral testimony for proof though afterwards reduced to writing. Nuncupative wills are now abolished, but with a proviso that any soldier in actual military service, or any mariner or seaman at sea, may dispose of his personal estate by an oral testament before a sufficient number of witnesses.

Nuneaton (nun'ē-tun), a town in England, in the county of Warwick, on the left bank of the Anker, 17 miles N. N. E. of the town of Warwick. It has two endowed schools, and the industries include woven worsted goods, wool and skin dressing, iron working, toolmaking, etc. The ribbon manufacture, formerly important, has declined. Coal and iron are found in the vicinity. Pop. 37,083.

Nunez de Balboa. See *Balboa.*

Nuphar (nū'fär), the generic name of the yellow water-lilies, nat. order Nymphæaceæ.

Nuraghi (nu-rä'gē), the name given to certain ancient structures peculiar to Sardinia, resembling in some respects the 'burghs' or 'brochs' (which see) found in some of the northern parts of Scotland. They are conical structures with truncated summits, 30 to 60 feet high and 35 to 100 feet diameter at the base, built of unhewn blocks of stone without mortar. They generally contain two or three conically vaulted chambers one above the other, connected by a spiral staircase in the thickness of the wall, and are built either on natural or artificial eminences. Their purpose is not known, but they are probably prehistoric monumental tombs.

Nureddin. See *Noureddin.*

Nuremberg (nū'rem-berg; Ger. *Nürnberg*, nürn'berk), a town in Bavaria, 93 miles N. N. W. of Munich. It is surrounded by well-preserved ancient walls having numerous massive towers and gateways, and the whole inclosed by a dry moat. The walls have of late been breached in several places to afford access from the extensive and rapidly increasing suburbs. Within the walls it is one of the best preserved specimens of a mediæval town in existence. The houses are generally lofty and picturesque, and many of them have three ranges of dormer windows on their steep roofs. The town, which is very densely built, rises gradually to a height on the north side, on which the old castle is situated. The Pegnitz, traversing the town from east to west, divides it into two nearly equal parts—the north and the south, which communicate by numerous bridges. It contains a large marketplace and several interesting churches, among the finest of which are the Gothic churches of St. Lawrence and St. Sebaldus, both dating from the thirteenth century. The former among its treasures of art contains an elaborate and delicately carved ciborium

of stone in the form of a Gothic spire 65 feet high by Adam Krafft; the latter, St. Sebald's monument, the masterpiece of Peter Vischer, consisting of a rich late Gothic altar shrine and canopy in bronze adorned with numerous statues and reliefs. Other places of worship are the fourteenth century Marienkirche (Roman Catholic), and the Jewish synagogue in oriental style (1867-74). The castle dates from the reign of Frederick Barbarossa (1158); part of the interior was fitted up in Gothic style (1854-56) as a royal residence. The town hall is adorned with frescoes by Albert Dürer, and a relief in stucco by Kern. The Germanic National Museum, founded in 1852 in a suppressed Carthusian monastery, a Gothic building of the fourteenth century with extensive cloisters, and recently greatly extended by the addition of the Augustinian monastery rebuilt adjoining, now ranks among the first in Germany, and is exceedingly rich in works illustrative of the arts and industries of the middle ages. It has also a library and a collection of charters. There are several fountains, the chief of which is the Schöne Brunnen, erected in 1385-96, and restored 1821-24. It is in the form of a graceful Gothic cross 63 feet in height, adorned with numerous figures; and modern statues of Dürer, Hans Sachs, Melanchthon, and other worthies. Nuremberg has extensive breweries, railway-carriage and lead-pencil manufactories, and produces fancy articles in metal, carved wood, ivory, etc., chemicals, clocks and watches, cigars, playing-cards, etc. It has long been noted for its small wares, known in trade as 'Nuremberg wares,' such as toys, and small gold, silver and ivory articles, etc., which are sent to all parts of the world. Printing and bookbinding are also extensively carried on, and the hop market is the most important on the Continent. The town is celebrated, in connection with its industry, for the invention of watches. It was an independent town down to 1806, when it became a Bavarian city it has prospered first of the imperial towns to cast its lot for the Reformation. During the Thirty Years' war about 10,000 of the inhabitants perished, while Gustavus Adolphus was besieged here by Wallenstein (1632). Before the discovery of the sea passage to India, Nuremberg was the great mart of the produce of the East coming from Italy and going to the North. Several causes led to a decline; but since it became a Bavarian city it has prospered greatly, and is now the most important seat of trade and manufactures in South Germany. Pop. (1910) 332,651, three-fourths being Protestants.

Nuremberg—The Pegnitz and St. Lawrence Church.

Nurse, one who tends or takes care of the young, sick, or infirm; spe-

cifically a woman hospital attendant. There are now numerous institutions where active, intelligent, and physically able women are thoroughly trained for this work. The system of sending trained nurses to a seat of war originated with Miss Florence Nightingale during the Crimean war, and organizations for military nursing during war are now common to all civilized countries. See *Red Cross Societies.*

Nursery (nur'se-ri), a place where vegetables, flowering plants, and trees are raised from seed in order to be sold in their young state either for use as food or for transplantation. The advantage of having separate places devoted to this purpose consists in this, that more attention can in that case be given to the objects of culture at the time when particular care is required by them. In the case of trees there is another great advantage in the fact that they can be selected from the nursery at a stage of their growth at which it can be pretty satisfactorily determined that they are likely to thrive. Nurseries are parceled out into several plots according to the different kinds of plants or trees to be raised. One part is assigned to the ordinary culinary vegetables; others to flowering plants requiring different kinds of soil; another to forest trees with caducous leaves; another to ornamental trees and shrubs with caducous leaves; another to trees and shrubs with persistent leaves; and another to fruit trees. For the propagation of many exotic and other trees and plants a large extent of ground in a well appointed nursery is under glass. Sometimes also different parts of the nursery are allotted to the various operations, such as budding and grafting, by which trees are propagated.

Nursingpore. See *Narsinghpur.*

Nusseerabad. See *Nasirabad.*

Nut, in botany, a one-celled fruit containing when mature only one seed, and enveloped by a pericarp of a hard, woody, or leathery texture, rarely opening spontaneously when ripe. Among the best known and most valuable nuts are the hazel-nut, Brazil-nut, walnut, chestnut, hickory, pecan and cocoanut, all of which are edible. Various other kinds of nuts are used for special purposes. Thus valonia-nuts, gall-nuts (not, strictly speaking, nuts—see *Galls*), and myrobalan-nuts are used in tanning and dyeing, the last two also in ink-making; betel-nuts in making tooth-powder and tooth-paste; and coquilla-nuts and vegetable-ivory (the kernel of the nut of the Peruvian palm), being very hard and capable of taking on a fine polish, are used in making small ornamental articles of turnery.

Nutation (nū-tā'shun), in astronomy, a small subordinate gyratory movement of the earth's axis, in virtue of which, if it subsisted alone, the pole would describe among the stars, in a period of about nineteen years, a minute ellipse, having its longer axis directed towards the pole of the ecliptic, and the shorter, of course, at right angles to it. The consequence of this real motion of the pole is an apparent approach and recess of all the stars in the heavens to the pole in the same period; and the same cause will give rise to a small alternate advance and recess of the equinoctial points, by which, in the same period, both the longitudes and right ascensions of the stars will be also alternately increased or diminished. This nutation, however, is combined with another motion, viz., the precession of the equinoxes, and in virtue of the two motions the path which the pole describes is neither an ellipse nor a circle, but a gently undulating ring; and these undulations constitute each of them a nutation of the earth's axis. Both these motions and their combined effect arise from the same physical cause, viz., the action of the sun and moon upon the earth. See *Precession.*

Nutcracker (nut'kra-ker), the name of an insessorial bird which is generally referred to the crow family, and so placed as to approximate either to the woodpeckers or starlings. The *Nucifrāga caryocatactes*, or European nutcracker, is about the size of the jackdaw, but with a longer tail. It combines to a considerable extent the habits of the woodpeckers and those of the omnivorous birds. It has received the name of nutcracker from its feeding upon nuts. The *N. columbiana*, noted for the diversified beauty of its plumage, frequents rivers and sea shores in America.

Nutgalls. See *Galls.*

Nuthatch (nut'hach), the common name of birds of the genus *Sitta*. The common European nuthatch (*S. europæa*) is a scansorial bird, of shy and solitary habits, frequenting woods and feeding on insects chiefly. It also eats the kernel of the hazel-nut, breaking the shell with great dexterity. The white-bellied nuthatch of North America (*Sitta Carolinensis*) is 6 in. long; the wings 4.

These birds are found in all cold and

temperate climates, the North American species (*S. carolinensis*) being known as the white-bellied nuthatch, its color being bluish above, the under parts bluish white.

Nutley, a town in Essex County, New Jersey, 5 miles N. of Newark. Paper, plush, leather goods, etc., are made. Pop. 6009.

Nutmeg (nut'meg), the kernel of the fruit of *Myristica moschata* or *fragrans*. This fruit is a nearly spherical drupe of the size and somewhat of the shape of a small pear. The fleshy part is of a yellowish color without, almost white within, and 4 or 5 lines in thickness, and opens into two nearly

Nutmeg (*Myristica moschata*).

equal longitudinal valves, presenting to view the nut surrounded by its arillus, well known as *mace*. The nut is oval, the shell very hard and dark-brown. This immediately envelops the kernel, which is the nutmeg commonly sold in the shops. The tree producing this fruit grows principally in the islands of Banda in the East Indies, and has been introduced into Sumatra, India, Brazil and the West Indies. It reaches the height of 20 or 30 feet, producing numerous branches. The color of the bark of the trunk is a reddish-brown; that of the young branches a bright green. The nutmeg is an aromatic, stimulating in its nature, and possessing narcotic properties, very grateful to the taste and smell, and much used in cookery. Nutmegs yield by distillation with water about 6 per cent. of a transparent oil, which has a burning aromatic taste.

Nutria (nū'tri-à), the commercial name for the skins of *Myopotamus coypus*, the coypou of South America. The overhair is coarse; the fur, which is used chiefly for hat-making, is soft, fine, and of a brownish-ash color.

Nutrition (nū-trish'un), the act or process by which organisms, whether vegetable or animal, are able to absorb into their system their proper food, thus promoting their growth or repairing the waste of their tissues. It is the function by which the nutritive matter already elaborated by the various organic actions loses its own nature, and assumes that of the different living tissues—a process by which the various parts of an organism either increase in size from additions made to already formed parts, or by which the various parts are maintained in the same general conditions of form, size, and composition which they have already by development and growth attained. It involves and comprehends all those acts and processes which are devoted to the repair of bodily waste, and to the maintenance of the growth and vigor of all living tissues.

Nux-vomica (nuks-vom'i-kà), the fruit of a species of *Strychnos* (*S. nux-vomica*), order Loganiaceæ, growing in various places in the East Indies. It is about the size and shape of a small orange, and has a very bitter acrid taste. It is known as a very virulent poison, and is remarkable for containing the veg e to-alkali *strychnia*. See *Strychnine*.

Strychnos nux-vomica.

Nyan'za. See *Albert Nyanza* and *Victoria Nyanza*.

Nyasa (ny-as'à), a large lake in Southeastern Africa, out of which flows the Shiré, a northern tributary of the Zambesi; discovered by Livingstone in 1859. The length of the lake is above 300 miles, and it varies in breadth from about 15 to more than 50 miles. The surface is 1522 feet above the sea level. There are missionary and trading stations in this region, and a road has been constructed between Nyasa and Tanganyika.

Nyasaland (ny-as'à-land), or BRITISH CENTRAL AFRICA (which see), the region adjoining Lake Nyasa, a plateau, occasionally reaching 3000 feet. The natives, over 923,000, speak Bantu languages, and seem to be a fusion of the East Coast negro, the West Coast negro and the Bushman.

Nyaya (ni'à-yà), a system of Indian philosophy said to have been

propounded by a sage named Gautama (not the founder of Buddhism). He lived at the commencement of the second of the four ages into which the Hindus divide the whole duration of the world's existence, and his life is represented as lasting 1000 years. His philosophy inquires into the way to attain perfect beatitude, or the final deliverance of the soul from re-birth or transmigration.

Nyborg (nü'borh), a seaport in Denmark, on the east side of the island of Fünen, 17 miles E. S. E. of Odensee. It was fortified until 1869. Pop. 7790.

Nyctaginaceæ (nik-ta-ji-nā'se-ē), NYCTAGIN'EÆ, a nat. order of plants inhabiting the warmer parts of the world, typical genera of which are the *Mirabilis* or marvel of Peru (see *Mirabilis*), *Abronia*, and *Pisonia*. The roots of many of the species are fleshy, purgative and emetic.

Nycticebus (nik-ti-sē'bus), the generic name of the kukang or slow-paced loris, the typical animal of the subfamily Nycticebidæ.

Nyctipithecus (nik-ti-pi-thē'kus), a genus of American monkeys which appear to represent the lemur tribe in America. Their habits are nocturnal and their movements cat-like.

Nye (nī), EDGAR WILLIAM, humorist, born at Shirley, Maine, in 1850; died in 1896. He wrote under the name of Bill Nye, bad spelling being combined with a racy humor in his productions.

Nyiregyháza (nyē'red-yä-zä), a town of Hungary, 30 miles N. of Debreczin. It has mineral springs and salt, soda and saltpeter manufactories. Pop. 31,875.

Nyköping (nü-cheup'ing), a seaport town in Sweden, capital of Södermanlän, and at the mouth of the river Nyköping, on the Baltic, 54 miles S. W. of Stockholm. It has shipbuilding and several minor industries. Pop. 7375.

Nylghau (nil'gä), the *Portax picta* or *tragocamelus*, a species of antelope as large as or larger than a stag, inhabiting the forests of Northern India, Persia, etc. The horns are short and bent forward; there is a beard under the middle of the neck; the hair is grayish-blue. The female has no horns. The nylghau is much hunted as one of the noblest beasts of the chase, the skin of the bull being in demand for the manufacture of native shields. The name nylghau literally means 'blue ox,' and has, doubtless, been applied to this animal from the ox-like proportions of its body. They are known to breed freely in confinement.

Nymegen. See *Nijmegen*.

Nymph, (nimf), a term sometimes applied to denote the *pupa* or *chrysalis* stage in the metamorphosis of insects and other animals.

Nymphæaceæ (nim-fē-ā'se-ē), a nat. order of aquatic plants containing the water lilies of various parts of the world. They are polypetalous hypogenous exogens, with the sides of the cells of the fruit covered with numerous seeds. The leaves are peltate or cordate and fleshy. The Victoria Regia is called water maize in South America. The species are mostly prized for the beauty of their flowers; as the

Nymphæa Lotus (white Egyptian water-lily).

Nymphæa alba, or white water lily, which grows in pools, lakes and slow rivers in Britain; the *N. cærulea*, or blue lotus of the Nile, often cultivated in gardens; the *N. Lotus*, or white lotus of the Nile; the *Nuphar lutea*, or yellow water lily; and the *Victoria Regia*.

Nymphs, in mythology, a numerous class of inferior divinities, imagined as beautiful maidens, not immortal, but always young, who were considered as tutelary spirits not only of certain localities, but also of certain races and families. They occur generally in connection with some other divinity of higher rank, and they were believed to be possessed of the gift of prophecy and of poetical inspiration. Those who presided over streams were called *Naiads*; those over mountains, *Oreads*; those over woods and trees, *Dryads*, and *Hamadryads*; those over the sea, *Nereids*.

Nynee Tal (nī'nē-tal), a town of British India in the United Provinces. Pop. 7609.

Nystad (nü'stad), a town and seaport in Finland, 36 miles N. W. of Abo, on the Gulf of Bothnia. A peace was concluded here between Russia and Sweden in 1721. Pop. 4044.

O

O, the fifteenth letter and the fourth vowel in the English alphabet. In English O represents six or seven sounds and shades of sound: (1) as in *note, go*, etc. (2) The similar short sound as in *tobacco*. (3) The sound heard in *not, gone*. (4) The same sound lengthened as in *mortal*. (5) The sound in *move, do, tomb, prove*. (6) The same sound but shorter as in *wolf, woman*. (7) The sound of *u* in *tub*, as in *come, done, love*. It is also a common element in digraphs, as *oo, oa, ou*.

O', in Irish proper names, a patronymic prefix corresponding to the Mac of the Highlands of Scotland; thus O'Connell means 'the son of Connell.'

Oahu (ō-ä'hō), one of the Sandwich Islands (which see). Pop. 58,504.

Oajaca, or OAXACA (ō-ä-hä'kä), a State of Mexico, on the Pacific Ocean and the Gulf of Tehuantepec; area, 35,582 square miles. It is of uneven surface, and in many parts mountainous; but is one of the most beautiful and best-cultivated districts in Mexico. Among the minerals are gold, silver, copper, quicksilver, iron, etc. Wheat, maize, indigo, cochineal, cotton, sugar, cocoa, coffee, and many fruits are produced. The only port is Huatulco. The inhabitants are chiefly Indians. Pop. 948,633.—The capital, which has the same name, stands near the river Verde, 218 miles S. S. E. of Mexico, 4800 feet above the sea. It is well built, about 2 miles in length by 1¼ miles in breadth, including the suburbs, which are full of gardens and plantations of cochineal. The inhabitants are industrious, manufacturing silk, cotton, sugar and chocolate. Pop. (1910) 38,011.

Oak (ōk), the general name of the trees and shrubs belonging to the genus *Quercus*, nat. order Cupuliferæ, having monœcious flowers, those of the males forming pendulous catkins, those of the females solitary or in clusters, and having an involucre which forms the well-known 'cup' of the fruit—the acorn. The oak from the remotest antiquity has obtained a preëminence among trees, and has not unjustly been styled the 'monarch of the woods.' In the traditions of Europe and a great part of Asia the oak appears as a most important element in religious and civil ceremonies. It was held sacred by the Greeks and Romans, and no less so by the ancient Gauls and Britons. The species of oak are very numerous, generally natives of the more temperate parts of the northern hemisphere, but found also in Java, Mexico and South America. They have alternate simple leaves, which are entire in some, but in the greater number variously lobed and sinuated or cut; evergreen in some, but more generally deciduous. The British oak (*Q. Robur*) is found in two forms or varieties, by some regarded as distinct species—*Q. sessiliflōra* and *Q. pedunculāta;* the wood of the former is heaviest and toughest, that of the latter being in favor with cabinet makers for ornamental work. (See also *Durmast.*) For more than a thousand years British ships were mainly built of common oak (*Q. Robur*). The common oak attains a height of from 50 to 100 or even 150 feet, with a diameter of trunk of from 4 to 8 feet. Noble specimens of oak trees, and some of them historically celebrated, exist almost all parts of Britain. On the settlement of the United States oaks were found to be still more numerous there in species than in Europe, most of them yielding valuable timber. The white oak (*Q. alba*), extending from the Gulf States to Canada, is inferior in quality only to the British oak, and other species of value are the over-cup oak of the Southern States (*Q. lyrata*); the live-oak (*Q. virens*), also southern; the red-oak (*Q. rubra*), widely distributed, the black oak (*Q. nigra*); and others of less value. The dwarf chestnut oak (*Q. primoides*) and several others produce edible acorns. The oak subserves a great number of useful purposes, the wood being hard, tough, tolerably flexible, strong without being too heavy, not readily penetrated by water. Among the other chief species are the dyer's oak (*Q. tinctoria*), the bark of which is used for tanning and dyeing leather; the cork oak (*Q. Suber*), live oak (*Q. virens*), the Turkey oak (*Q. Cerris*) furnishing a

valuable timber; the valonia oak (*Q. ægilops*) whose acorn-cups are largely used in tanning; the kermes oak (*Q. coccifēra*), the edible oak (*Q. æsculus*), yielding edible acorns; evergreen oak (*Q. ilex*). The bark of the common oak tree and of several others is preferred to all other substances for the purpose of tanning, on account of the amount of tannic and gallic acid it contains. Oak galls, morbid growths caused by insects (see *Galls*), are also much used in tanning, especially those of *Q. infectoria*. Oak bark is also used medicinally as an astringent. The name oak is sometimes popularly applied to timber of very different genera of trees; thus African teak is often called *African oak;* while in Australia the term oak is applied to some species of *Casuarina*. What is known as *green oak* is a condition of oak-wood caused by its being colored with the spawn of *Peziza æruginōsa*, a species of fungus.

Oak-beauty, the popular name of a British moth (*Biston prodromaria*), whose caterpillar feeds on the oak.

Oakham (ōk'kam), or OKEHAM, the county town of Rutland, England, situated in the Vale of Catmos, 85 miles N. N. W. of London. It has a fine old church, a free grammar school, and an old castle. Pop. 3668.

Oakland (ōk'land), a city of California, seat of Alameda County, on the east side of San Francisco Bay, opposite San Francisco, of which it is often considered a suburb. It is the terminus of the Ogden branch of the Southern Pacific, of the Atchison, Topeka and Santa Fé, and of the Western Pacific railways. It has a good harbor, and many manufactures, including extensive iron-works, smelting and metallurgical works, canneries, tanneries, etc. There is extensive cultivation of flowers. Pop. 150,174.

Oak-leaf Roller (*Tortrix viridāna*), a small moth which is very destructive to trees and takes its name from the fact that the larvæ roll themselves up in the oak leaves, which give them both food and shelter. The front wings are green, but the chief color is brown.

Oak-leather, a kind of fungous spawn found in old oaks running down the fissures, and when removed not unlike white kid leather. It is very common in America, where it is sometimes used for spreading plasters on.

Oak Park, a village of Cook County, Illinois, 8½ miles W. of Chicago, of which it is a suburb. It has no industries, being essentially a place of residence. Pop. 19,444.

Oakum (ō'kum), the substance of old tarred or untarred ropes untwisted and pulled into loose fibers; used for caulking the seams of ships, stopping leaks, etc. That formed from untarred ropes is called white oakum.

Oamaru (ō-ä'ma-rō), a seaport of New Zealand, on the east coast of Otago, the second town of the provincial district next to Dunedin, with which it is connected by railway. It is a handsome town built of pure white limestone, has a safe and commodious harbor, and exports large quantities of cereals and other agricultural produce. It has grain-mills, a woolen factory, etc. Pop. 5071.

Oannes (o-an'nes), the Babylonian sea-god. He is described as having the head and body of a fish, to which were added a human head and feet. In the daytime he lived with men to instruct them in the arts and sciences, but at night retired to the ocean.

Oar (ōr), a long piece of timber flat at one end and round at the other, used to propel a boat, barge, or galley through the water. The flat part, which is dipped into the water, is called the *blade;* the other end is the *handle;* and the part between the two is called the *loom*. Oars are frequently used for steering, as in whale-boats. *Sweeps* are large oars used in small vessels sometimes to assist the rudder, but usually to assist the motion of the ship in a calm. A *scull* is a short oar of a length such that one man can manage two, there being one on each side, or a single oar used in propelling a boat, it being placed over the stern.

Oar-fish (*Regalēcus Banksii*), one of the ribbon-fishes, a peculiar deep sea fish, 12 to 20 feet or more in length, but having a narrow and extremely compressed body. It is of a silvery color, and is only rarely met with, usually in a dying condition.

Oasis (ō-ä'sis), originally the name of the fertile spots in the Libyan Desert where there is a spring or well and more or less vegetation, but now applied to any fertile tract in the midst of a waste, and often used figuratively. The oases of Northern Africa are generally river valleys, the waters of which are for the most part underground, or depressions surrounded by short ranges of hills, from which small brooks descend, sometimes forming a lake in the center. In recent times oases have been formed in the Northern Sahara by sinking artesian wells. There are many important oases in the Western Sahara, in the Libyan Desert, in Arabia, Persia, and

in the Desert of Gobi in Central Asia. In ancient times the most celebrated oasis was that to the west of Egypt, containing the temple of Jupiter Ammon, now called the Oasis of Siwah. See *Egypt*, *Sahara*.

Oat (ōt), or OATS (*Avēna*), a genus of edible grasses cultivated extensively in all temperate climates, and though principally grown as food for horses largely used when ground into meal as human food. There are about sixty species, the principal of which are *A. sativa* (the common oat), *A. nuda* (naked oat, pilcorn, or peelcorn), *A. orientālis* (Tartarian or Hungarian oat), *A. brevis* (short oat), *A. strigōsa* (bristle-pointed oat), *A. chinensis* (Chinese oat), etc. The cultivated species of oats are subdivided into a large number of varieties, which are distinguished from each other by color, size, form of seeds, quality of straw, period of ripening, adaptation to particular soils and climates, and other characteristics. The yield of oats varies from 20 bushels to 80 bushels per acre according to soil, etc. The weight per bushel varies from 35 to 45 lbs., and the meal product is about half the weight of the oats. Oatmeal is a cheap and valuable article of food, and its value seems to be becoming more appreciated among the wealthier classes as it is being neglected by the poorer. The wild oat (*A. fatua*) is supposed to be the original of all the species, but its native country is unknown.

Oates (ōts), TITUS, son of a ribbon weaver, born in London about 1620; died in 1705. He took orders in the Church of England, and held benefices in Kent and Sussex; became afterwards chaplain in the navy and was discharged for misconduct; turned Roman Catholic, and resided for some time at the Jesuit College of Valladolid and St. Omar, but was finally, in 1678, dismissed for repeated misdemeanors. Flung into the world as a mere adventurer, he returned to England and concocted the story of the famous 'Popish Plot' (which see). Various events gave color to the accusation, and in the public excitement created by the story several eminent Catholics were executed, while Titus Oates was lodged handsomely in Whitehall, and received a pension of £900 from parliament. The effects of this perjury continued for two years until, after the execution of Strafford, there was a revulsion of public opinion. He was afterwards convicted of perjury, sentenced to be pilloried five times a year, whipped from Aldgate to Newgate, and imprisoned for life. On the accession of William and Mary he was liberated, and lived to a good old age, enjoying an ill-deserved pension of £300 a year.

Oath (ōth), a solemn assertion or promise, with the invocation of God to be a witness of the truth of what we say. Various forms have been associated with oath-taking. Thus, men have proclaimed and symbolized their promise by chopping a fowl in two, by standing within a circle of rope, by placing the hand under another's thigh, by dipping weapons into or drinking blood, or by stretching the hands upwards towards the sky, and this latter gesture has established itself throughout Europe. Among the early Christians the question of oath-taking was a matter of much controversy, objection to it being founded upon Christ's command of 'Swear not at all' (Matt. v, 34); but this injunction was held by Athanasius and others only to prohibit colloquial as distinct from judicial swearing. This objection is still maintained, however, by Mennonites, Quakers, Anabaptists; and the Secularists in England, upon other grounds, refuse the judicial oaths. Oaths to perform illegal acts do not bind, nor do they excuse the performance of the act. In civil law, oaths are chiefly divided into two classes—assertory or affirmative oaths (*juramenta assertoria*), establishing the certainty of a present or past event, and promissory oaths (*juramenta promissoria*), which refer to a future event, a promise to execute some contract or undertaking. The laws of all civilized countries require the security of an oath for evidence given in a court of justice, and on other occasions of high importance. Any person called as a witness, or required or desiring to make an affidavit or deposition, who shall, from conscientious motives, refuse to be sworn, may obtain from the court, on its being satisfied of the sincerity of the objection, permission to make a solemn affirmation or declaration instead. See *Affirmation*, *Perjury*.

Oaxaca. See *Oajaca*.

Ob. See *Obe*.

Obadiah (ob-a-dī'a), one of the twelve minor prophets, who foretells the speedy ruin of the Edomites. The prophecy was probably uttered during the period which elapsed between the fall of Jerusalem (586 B.C.) and the conquest of Edom by Nebuchadnezzar (583 B.C.).

Oban (ō'ban), a seaport of Scotland, county of Argyle, situated on a large protected bay 92 miles from Glasgow and 498 miles from London by rail.

It is the terminus of a railway, the starting place for steamer routes, and the headquarters of tourists to the Western Highlands. Pop. 5374.

Obbliga'to. See *Obligato.*

Obdorsk (ob-dorsk'), a fishing town in Asiatic Russia, near the mouth of the Obe; the projected terminus of a railway across the northern part of the Urals to the Arctic Ocean.

O'be, O'BI, or OB, a river of Siberia, which, rising in the Altai Mountains, pursues a very circuitous course northwest to Samarova, and there dividing, flows north in a double channel to the Gulf of Obe. It chief tributaries are the Irtish, Tobol, Tom and Tchulim. Its course is estimated at 2000 miles.

Obeah (ō-bē'a), or OBI, a species of witchcraft practiced among negroes of the West Indies. The practicer of this form of degraded superstition is called an Obeah-man or -woman, and possesses great influence.

Obeid (o-bid'), EL, an African town, the capital of Kordofan, 220 miles southwest of Khartoom. The inhabitants carry on a large trade in gum, ivory, gold, etc. It was for a time a Mahdist stronghold with a population of about 30,000. It has now hardly 7000.

Obelisk (ob'el-isk), a column of a rectangular form, diminishing towards the top, generally terminating in a low pyramid. The proportion of the thickness to the height is nearly the same in all obelisks, that is, between one-ninth and one-tenth; and the thickness at the top is never less than half, nor greater than three-fourths of the thickness at the bottom. Egypt abounded with obelisks, which were always of a single block of hard stone; and many have been removed thence to Rome and other places. They seem to have been erected to record the honors or triumphs of the monarchs. The two largest obelisks were erected by Sesostris in Heliopolis; the height of these was 180 feet. They were removed to Rome by Augustus. A fine obelisk from Luxor was erected in Paris in 1833, and the two known as Cleopatra's Needles are now in London and New York. (See *Cleopatra's Needles.*) Besides those of Egypt, monoliths of this appearance, but smaller in size, have been found in the ruined cities of Nineveh and Nimrūd. The obelisks which were common to Rome, Florence, etc., had all been removed from Egypt during its domination by the Roman emperors.

Obelus (ob'e-lus), a mark, usually of this form — —, or this ÷, in ancient MSS. or old editions of the classics, and indicating a suspected passage or reading.

Ober (ō'bèr), FREDERICK ALBION, author, was born at Beverly, Massachusetts, in 1849. He traveled extensively in Florida, the West Indies, Mexico, Spain, Africa and South America, and wrote *Camps in the Caribees, Young Folks' History of Mexico, Puerto Rico and Its Resources, The Silver City, Montēzuma's Gold Mines, a Guide to the West Indies, Heroes of American History,* and many other works.

Oberammergau (ō-ber-ăm'er-gō), a village in Upper Bavaria, celebrated for the performance, every ten years, of the passion-play of Christ's crucifixion and ascension. The performance takes place every Sunday during the summer, on a large wooden stage open to the sky, and it usually lasts eight hours. Primarily regarded by these Bavarian villagers as a religious exercise, it has become in their performances a mystery play of impressive beauty. Latterly, however, it has taken the character of a European amusement and a source of profit.

Oberhausen (ō'bèr-hou-zn), a town of Prussia, in the Rhine province, 51 miles east of the Rhine and 20 north of Düsseldorf, now an important center of the iron industry, having also coal mines, chemical works, porcelain and glass works, etc. Pop. (1910) 89,900.

Oberlahnstein (ō-bèr-lăn'stīn), a town of Prussia, district of Wiesbaden, at the junction of the Lahn with the Rhine, an interesting old place with well-preserved walls, towers, etc. Pop. 8472.

Oberlin (ō'ber-lin), JOHANN FRIEDRICH, Lutheran minister, born at Strasburg in 1740; died in 1826. He became pastor of Waldbach in the Steinthal (Ban de la Roche) district of Alsace in 1767, and set about ameliorating the wretchedness of the district and the people. Despite opposition he gradually effected a wonderful improvement in the morals, industry and thrift of the community. Besides agriculture, Oberlin introduced straw plaiting, spinning and weaving into the community, so that the village of a few hundreds became a town with 5000 inhabitants, and a model to great numbers of philanthropists.

Oberlin College, an educational institution for both sexes at Oberlin, Ohio, comprising a preparatory department, a woman's department, a department of arts and philosophy, and a theological department. The attendance averages over 2000; the endowment is nearly $2,000,000.

Oberon (ō'ber-on), in popular mythology, a king of the elves or fairies, and husband of Titania. He appears first in the old French poem *Huon de Bordeaux*, but is best known from Shakespeare and from Weber's opera of *Oberon*.

Oberstein (ō'ber-stin), an old town of Western Germany in the principality of Birkenfeld, 28 miles southwest from the Rhine at Bingen, picturesquely situated on the Nahe. Cutting and polishing of agates is a specialty of the place. Pop. 9669.

Obesity. See *Corpulence*.

Obiter dictum (L.), a saying by the way, and applied specifically in law to the casual opinion of a judge in contradistinction to a *judicial dictum*.

Object (ob'jekt), in philosophy, the correlative of subject, a term used to represent the distinction between the mind, or agent, or conscious being, or whatsoever it is conceived to be that thinks (the subject), and that, whatsoever it is, that is thought of (the object). The terms subject and object were first introduced in their modern relation in scholastic philosophy, and the distinction between them was at first merely logical. *Object*, in grammar, is the word or member of a sentence or clause expressing that on which the action expressed by a transitive verb in the sentence or clause is exercised, or the word or member governed by a preposition, the word being thus put in the *objective case*.

Object-glass, in a telescope or microscope, the lens which first receives the rays of light coming directly from the object, and collects them into a focus. In the finest refracting telescopes the object-glass consists of an achromatic combination of lenses, formed of substances having different dispersive powers, and of such figures that the aberration of the one may be corrected by that of the other. The substances chiefly used are crown-glass and flint-glass.

Objective. See *Object*.

Oblati (ob-lā'ti), or OBLATES, a name given from an early period in the Roman Catholic Church to children dedicated to the church, and now applied to such persons as associate themselves like monks or nuns but without taking vows. Under the name of Oblati of St. Ambrose a congregation of secular priests was established at Milan in 1578 by St. Charles Borromeo. The Oblates of Mary Immaculate, or of the Immaculate Conception, were founded in 1815, at Aix, by the Abbé Mazenod. Their duties were to consecrate themselves to parochial missions in their dioceses; to spiritual ministrations, especially to the young, to the poor, and to prisoners. The order has houses or missionary establishments in France, England, Scotland and the United States.

Obligation (ob-li-gā'shun), is a term in law which describes the bond under which a person binds himself to pay within a certain time and in the breaking of which a penalty is involved; or the tie in general by which a person is legally bound to the performance of anything.

Obligato (ob-li-gā'tō), or OBBLIGATO (Ital. 'required') in music, a part or accompaniment in a composition for a particular instrument of such character and importance that it is indispensable to the proper performance of the piece.

Obock (ō-bok'), a port and territory belonging to France on the African coast of the Gulf of Aden, near the entrance to the Red Sea. Total pop. 22,370.

Oboe (ō'boi), a musical wind instrument resembling a clarionet in shape, and sounded through a double reed. It consists of three joints besides the mouthpiece, and its compass is generally from B below the treble clef to F in alt, with the intermediate semitones, being a compass of two octaves and one-fifth. The name oboe is from the Italian; the French form, *hautboy* (*hautbois*), was formerly more frequently used.

Oboe.

Obolus (ob'o-lus), a small coin of ancient Greece, in later times of silver, the sixth part of an Attic drachma, equal to 2½ cents; multiples and submultiples of this coin were also used, and pieces of the value of 5, 4, 3, 2, 1½

A

Brass Obolus of Metapontum. A, Actual diameter of coin.

oboli, and ½, ⅓, ¼th of an obolus respectively are to be found in collections.

O'Brien, WILLIAM SMITH, an Irish nationalist, born in 1803; died in 1864. He entered parliament in

1826, and subsequently joined the Young Ireland group of politicians, and advocated the use of physical force. In an endeavor (1848) to effect a rising in Tipperary, he was surrounded, arrested, tried by special commission at Clonmel, and sentenced to death, but in the end this was commuted to transportation. He was set at liberty in 1854, and fully pardoned in 1856.

Obscurantism (ob-skū'ran-tizm), a word derived from Germany, where it was originally used at the time of the revival of learning, to signify opposition to progress and enlightenment. Those who opposed all innovation were called *Obscurants*.

Observation Car, a railroad car with open or glass sides, or ends, for obtaining an unobstructed view of the surrounding scenery or the track. It is used for tourists and by railroad officials on inspection trips.

Observants. See *Franciscans*.

Observatory (ob-ser'va-tur-i), a building devoted to the observation of astronomical, magnetic, meteorological, or other natural phenomena. The astronomical observatory is the one of most general interest. Astronomical observation began at an early date in China; the pyramids in Egypt seem in some way to have been associated with stellar observation; and the first historical observatory was founded in Alexandria 300 B.C. Its work was begun by Aristillus, and continued by Timocharis, Hipparchus, Aristarchus, and others. The first European observatory was built at Nuremberg by Bernhard Walther in 1472, and this was followed in the sixteenth century by Tycho Brahe's famous observatory on the island of Hven, near Copenhagen, while another was erected by the Landgrave of Hesse at Cassel in 1561. Through the labors of Brahe practical astronomy became associated with the universities, so that Leyden and Copenhagen founded observatories. These were followed by the construction of the Royal Observatory at Paris (1667), the Greenwich Royal Observatory (1675), the Tusculan Observatory near Copenhagen (1704), Berlin (1705; new observatory 1835), Vienna (1756), Dublin (1785), Königsberg (1813), Sydney (1820), Cape of Good Hope (1820), Edinburgh (1825), Pulkova, near St. Petersburg (1839), Cambridge, United States (1839), Washington (1845), Lick Observatory, California (1888), Chicago (1896), and others elsewhere. The chief instrument used in the observatory is the telescope, whether in the form of the equatorial or in the mural circle and transit instrument, together with the sidereal and the solar clock. In the larger observatories the application of spectrum analysis, photography, photometry, etc., has greatly increased the number and variety of observations. The observatory building must be constructed in a very stable manner, and as the instruments must be out of contact with the walls they are attached to stone pillars that rest on foundations separate from the rest of the building.

Obsidian (ob-sid'i-an), vitreous lava, or volcanic glass, lava which has become glassy by rapid cooling, generally placed among the felspars. Obsidian consists of silicate of alumina with iron, and lime or potash or soda according to the species of felspar involved. In Mexico and Peru cutting weapons and rings were manufactured out of it. See *Pumice* and *Pitchstone*.

Obstetrics. See *Midwifery*.

Ocarina (ok-a-rē'na), a musical wind-instrument of clay, of clumsy shape, pierced with a number of small holes, and giving a sweet tone.

Occam (ok'am), WILLIAM OF, a scholastic philosopher, born at Ockham, in Surrey, about 1270; died at Munich in 1347. He is said to have studied at Merton College, Cambridge, and also to have attended the lectures of Duns Scotus in Paris. He held several benefices in England, but entering the order of the Cordeliers, the latter and more distinguished part of his life was passed on the Continent. In 1322 he attended a general assembly of Franciscans at Pérouse, and there asserted the independence of princes in temporal affairs, and denounced the vices of the pope. For this he was condemned by the Council of Avignon, and being compelled to flee from Paris (1328) he took refuge with Louis of Bavaria. Occam is entitled *Doctor singularis et invincibilis*, and is noted as the philosopher who gave the final blow to the Realism of the middle ages, and perhaps the first effective blow to the pope's authority.

Occasional Causes, in metaphysics, a term employed by the Cartesians to explain the mode of communication between mind and matter. The soul being a thinking substance, and extension being the essence of body, no intercourse can take place between them without the intervention of the First Cause. It is Deity, therefore, who, on the occasion of certain modifications of our minds, excites the corresponding movements of body; and, on the occasion

of certain changes in our body, awakens the corresponding feelings in the mind.

Occident (ok'si-dent), the western quarter of the hemisphere, so called from the decline or setting of the sun; the west: used in contradistinction to *orient*.

Occultation (ok-ul-tā'shun), is the term used in astronomy for the hiding of a star or planet from our sight by passing behind some other of the heavenly bodies, and specifically applied to the eclipse of a star or planet by the moon. The word denotes also the time during which a star or planet is so hidden from our sight.

Occupancy (ok'ū-pan-si), in law, the taking possession of a thing not belonging to any person, and the right acquired by such taking possession.

Ocean (ō'shan), or SEA, the vast body of water which covers more than three-fifths of the surface of the globe. Although no portion of it is completely detached from the rest, the ocean has often been divided into several great basins or areas, viz., the Pacific Ocean, which separates Asia and Australia from America; the Atlantic Ocean, which separates America from Europe and Africa; and the Indian Ocean, which intervenes between Africa and Australia; together with the Arctic and the Antarctic Oceans, around the north and south poles respectively. Between these no very definite limits can be drawn; thus it is impossible to say where the Atlantic or the Pacific ends and the Antarctic or Southern Ocean begins. The bed of the ocean appears to present the same irregularities as the surface of the land, being diversified by rocks, mountains, plains and deep valleys. The deepest soundings at present known are 4655 fathoms (northeast of Japan), 4561 fathoms (north of Porto Rico), 4475 fathoms (south of the Ladrone Islands). (See *Atlantic Ocean*, *Pacific Ocean*, etc.). The waters of the ocean vary as greatly in temperature as they do in depth. This is partly due to the ordinary effects of isolation; but the abrupt changes and anomalous distribution of temperature is chiefly owing to currents. (See *Currents, Marine.*) The Pacific and Indian Oceans are both warmer in low latitudes than the Atlantic, and the mean temperature of the equatorial areas at the surface is assumed to be 81°.5; the warmth of the North Atlantic is anomalous, and due to the influence of the Gulf Stream. This high temperature only applies to the surface water of the ocean, for experience shows that in both hemispheres and in all latitudes the basic water of the ocean is exceedingly cold. In low latitudes water at 32° has been drawn from great depths; while in high latitudes water at 26° has been found. This phenomenon is accounted for by the supposition that the cold water at the poles, by reason of its specific gravity, sinks to the bottom and spreads throughout the ocean basin. The saltness of the ocean is due to the presence of various saline ingredients (chiefly chloride of sodium or common salt), which are generally found in the proportion of from 30 to 40 per thousand. Recent observations have shown that the color and transparency of the water of the ocean are in a large measure dependent on the degree of saltness. In general it is found that the greater the transparency, and also that where the saltness is very great the water is of a dark-blue color, that where it is less the water is of lighter blue, inclining to green, and that in the neighborhood of rivers (where the saltness is reduced to a minimum) the water is as a general rule of a greenish-yellow.

Oceania (ō'she-an-i-a), includes all the islands of the Pacific between Asia on the northwest, the Indian Ocean on the west, the Antarctic Ocean on the south, and America on the north and east. It is usually divided into Australasia, Polynesia and Malaysia, or the Malay Archipelago.

Oceanus (ō-se'an-us), in Greek and Roman mythology, the eldest of the Titans, regarded as the god of the ocean or the river surrounding the earth, and the parent of the Oceanides or ocean nymphs.

Ocellus (ō-sel'us), one of the minute simple eyes of insects, many echinoderms, spiders, crustaceans, molluscs, etc. In insects these ocelli or stemmata are usually situated on the crown of the head between the great compound eyes, whose simple elements they resemble in structure, and in rare cases may be the sole organs of vision.

Ocelot (ō'se-lot; *Felis pardālis*), a digitigrade carnivorous mammal of the cat kind, peculiar to the American continent. It attains a length of about 3 feet, while the tail measures some 18 inches more. The ocelot inhabits great forests; its food consists mainly of birds and rodents; and it is timid but bloodthirsty.

Ochil Hills (ō'kil), a hill range of Scotland, on the borders of Perth, Clackmannan, Kinross and Fifeshire; length about 25 miles; average breadth about 12; highest summit, Beacleuch, 2363 feet.

Ochre (ō'kĕr), a combination of peroxide of iron with water; but the name is generally applied to clays colored with the oxides of iron in various proportions. Considerable quantities of ochre are obtained from the ferruginous mud separated from tin and copper ores; and it is also found in natural beds some feet thick in the more recent formations. Ochres vary in color from a pale sandy yellow to a brownish red, and are much used in painting.

Ocelot (*Felis pardalis*).

Ochrida (ok'ri-da), a town of European Turkey, in the mountainous region of Albania, on the shore of the lake of Ochrida, 2260 feet above sea level. It is the seat of Bulgarian and Greek bishops. Pop. 12,000.

Ockley (ok'li), SIMON, born at Exeter in 1678; died in 1720. He became professor of Arabic at Cambridge in 1711, and published a *History of the Jews*, several translations from Oriental languages, and a well-known *History of the Saracens*.

Oclawaha (ok-la-wa'ha; 'crooked water'), a river of Florida, which, after a very winding course of 275 miles, flows into the St. John's about 25 miles south of Palatka. Its banks are densely wooded, and the country so flat that the waters extend into the forest for a distance on either side. Many tourists visit it, and one of them relates that he steamed on this narrow river for five consecutive hours, and all that time was out of sight of land. He could see only trees and water.

Ocmulgee River (ok-mul'gē), a river which rises in the central part of Georgia, runs in a S. S. E. direction, passing the town of Macon and ultimately unites with the Oconee to form the Altamaha river. Length about 200 miles.

Oconee (ō-kō'nē), a river in Georgia, which rises in Hall Co., and unites with the Ocmulgee to form the Altamaha at Colquitt. It is navigable about 100 miles.

O'Connell (ō-kon'el), DANIEL, an Irish agitator, born in Kerry in 1775, and educated at a school in Cork and the Catholic colleges of St. Omer and Douay. He studied for the Irish bar, and soon became distinguished for legal skill and oratory. Turning his energy to Irish politics he advocated Catholic Emancipation; skilfully kept the agitation within constitutional lines; became member for Clare in 1828; and attained his triumph in the following year when the government of the Duke of Wellington granted the Catholic claims. After the Reform Bill he became conspicuous as the head of a parliamentary body called 'O'Connell's Tail.' In 1841 he developed his policy, called together enormous meetings throughout Ireland, and loudly raised a cry for the Repeal of the Union. This agitation Sir R. Peel and the government determined to put down. They arrested O'Connell, obtained a conviction, and sentenced him to twelve months' imprisonment with a fine of £2000. In a few months the House of Lords quashed this judgment. He made his last speech in parliament April, 1847, and died the following month.

O'Connor (ō-kon'or), THOMAS POWER, statesman, born at Athlone, Ireland, in 1848. He became a journalist, and in 1880 entered parliament as member for Galway, and was prominent in the Parnell party. In 1883 he became president of the Irish National League of Great Britain. He was an editor on several London papers, wrote *The Parnell Movement* and many magazine articles, and visited the United States on several occasions to raise money for the Irish cause.

O'Conor, CHARLES, lawyer, born in New York in 1804; died in 1884. He became one of the ablest of New York lawyers and was counsel in several celebrated cases. Thus he was senior counsel for Jefferson Davis when the Confederate ex-President was indicted for treason, and was conspicuous in the suits against William M. Tweed in 1871. He was elected president of the Law Institute of New York in 1869, was nominated for President of the United States by one of the many conventions of 1872, and in 1876 appeared before the Electoral Commission in support of the claim of Samuel J. Tilden against Rutherford B. Hayes to the Presidency.

Oconto (ō-kon'tō), a city, capital of Oconto Co., Wisconsin, one of the largest lumber manufacturing points in the State, is on Green Bay, at the mouth of Oconto River. It has an im-

portant lumber industry; also canning, brewing and other industries. Pop. 6500.

Ocracoke Inlet (ō'kra-kōk), an inlet of North Carolina, forming a passage into Pamlico Sound, 22 miles southwest of Cape Hatteras. On each side of the channel are dangerous shoals; on the bar are 14 feet at low water.

Ocrea (ō'kre-ä), in ancient costume, a greave or legging, made of tin, bronze, or other metal, covering and protecting the front of the leg from the knee to the ankle.

Octagon (ok'ta-gon), in geometry, is a figure of eight sides and angles, which when the sides and angles are all equal is called a *regular octagon*, and when they are not equal an *irregular octagon*.

Octahedron (ok-ta-hē'dron), in geometry, a solid contained by eight equal and equilateral triangles. It is one of the five regular bodies.

Octant (ok'tant), in astronomy, that position or aspect of a heavenly body, as the moon or a planet, when halfway between conjunction or opposition and quadrature, or distant from another point or body the eighth part of a circle or 45°. The word is also applied to an instrument for measuring angles, resembling a sextant or quadrant in principle, but having an arc the eighth part of a circle, or 45°.

Octave (ok'tăv), in music, an interval of seven degrees or twelve semitones above or below some sound counted from; or one sound eight tones higher than another. The octave is the most perfect of the chords, consisting of six full tones and two semitones major. It contains the whole diatonic scale. The most simple perception that we can have of two sounds is that of unisons, or sounds of the same pitch, the vibrations beginning and ending together. The next to this is the octave, where the more acute sound makes precisely two vibrations while the grave or deeper makes one; consequently, the vibrations of the two meet at every single vibration of the more grave one. Hence the ratio of the two sounds that form the octave is as 1 to 2. See *Music*.

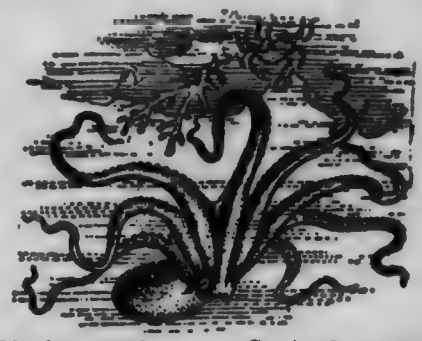
Octavia (ok-tā'vi-a), daughter of Caius Octavius and Atia, and sist to the Emperor Augustus, illustrious fo her virtues, her beauty, and her accomplishments, was the widow of Claudius Marcellus, by whom she had a son and two daughters before she was married, at the instance of her brother, to the triumvir Mark Antony. The latter neglected her for Cleopatra, queen of Egypt; notwithstanding which, Octavia displayed the m[illegible]le fidelity to his house and fortun[illegible] devoted herself to the education o[illegible] his children, until he divorced and ordered her to leave his house, a command she obeyed without complaint. She died in 11 B.C.

Octavius, or OCTAVIANUS. See *Augustus*.

Octavo (ok-tā'vō), the size of one leaf of a sheet of paper folded so as to make eight leaves: usually written *8vo*; hence, a book having eight leaves to the sheet. There are different sizes of octavo, arising from the different sizes of paper employed; as, *foolscap 8vo, demy 8vo, imperial 8vo*.

October (ok-tō'bĕr; from the Latin *octo*, eight), originally the eighth month in the Roman calendar, whence its name, which it still retained after the beginning of the year had been changed from March to January.

Octopus (ok'tu-pus), a genus of dibranchiate Cephalopoda, familiarly known as cuttle-fishes. They have eight arms, each with two rows of suckers, which are sessile or unstalked. The prominent head is joined to the body by a distinct neck, and the body itself is short, generally more or less rounded in shape, and unprovided with side or lateral fins. They have attained a notoriety from tales circulated concerning their ferocity and the existence of gigantic members of the genus, though the largest



The Common Octopus or Cuttle (*O. vulgaris*).

cuttle-fishes that have been met with have belonged to other genera. The *O. vulgaris*, or common cuttle, is common in the Mediterranean. It is said to reach a length of 9 feet and a weight of 63 pounds, the arms being long and slender.

Octroi (ok-trwä), an old French term signifying a grant, privilege, or monopoly from government to a person or to a company. Octroi also signifies a tax levied at the gates of French cities,

towns, etc., on produce brought in for use.

Ocuba-wax (o-kû'ba), a vegetable wax obtained from the fruit of *Myristica ocŭba, officinālis*, or *sebifĕra*, a plant of the nutmeg genus growing abundantly in the marshy grounds on the shores of the Amazon and its tributaries. It is easily bleached, and is used extensively in Brazil for the manufacture of candles.

Oczacow (och-â-kof'), or OTCHAKOF, a town in the Russian government of Kherson, on the Black Sea, at the mouth of the Dnieper, formerly an important Turkish fortress. Pop. 10,784.

Od, or ODIC FORCE, the name invented by Reichenbach and given by him to a peculiar force which he fancied he had discovered associated with magnetism. It has met with few scientific believers. Called also *Odyl, Odylic Force.*

Odalisk, ODALISQUE (ō'da-lisk; from Turk, *odalik*, a chamber companion), a female slave or concubine in the sultan's seraglio or a Turkish harem.

Odal Right (ō'dal), a free tenure of property, similar to allodial tenure, which prevailed in Northern Europe before the introduction of the feudal system. Odal or udal tenure still prevails in Orkney and Shetland.

Odd Fellows (od'fel-lōz), a large and extensively ramified friendly society, having its origin in Manchester, England. It was originally an association of a convivial kind, modeled on freemasonry, and still retains watchwords and secret signs. It assumed its present form at a convention in Manchester (1813), and has spread widely in Britain and elsewhere. It has been very prosperous in the United States, the first lodge, organized in Baltimore, April 26, 1819, becoming in 1825 the Grand Lodge of the United States. The membership in this country is now over 1,400,000. The American system has become popular in France, Germany, Switzerland, Holland, Sweden, Denmark, and various other countries. The amount paid for relief of members, burial of the dead, etc., annually is now over $5,000,000. See *Friendly Societies.*

Ode (ōd), a poem of lyrical character, supposed to express the poet's feelings in the pressure of high excitement, and taking an irregular form from the emotional fervency which seeks spontaneous rhythm for its varied utterance. The Greeks called every lyrical poem adapted to singing—and hence opposed to the elegiac poem—an ode (*ōdē*, that is, *song*). The principal ancient writers who employed this form of verse were Pindar, Anacreon, Sappho, Alcæus, among the Greeks, and Horace among the Romans. As employed by English writers the ode takes either the Pindaric form of strophe, antistrophe, and epode irregularly arranged and contrasted; or, as in its later development, the form of a series of regular stanzas.

Odenkirchen (ō'den-kir-ĥen), a town of Prussia, province of Rheinland, 15 miles w. s. w. of Düsseldorf. Pop. 16,808.

Odense (ō'then-sä), a seaport town of Denmark, capital of the Island of Funen, on a stream, and near the fiord of same name. It is well built; has an ancient and magnificent cathedral. Pop. (1911) 43,237.

Odenwald (ō'den-vâlt), a forest and chain of mountains in Western Germany, between the Neckar and the Main, in the territories of Hesse, Baden and Bavaria. The Odenwald is about 50 miles in length, and presents charming scenery.

Odeon (ō-dē'on; Gr. *ōdeion*, from *ōdē*, a song), a kind of theater in ancient Greece in which poets and musicians submitted their works to the approval of the public, and contended for prizes. The name is now sometimes applied to a hall or chamber for musical or dramatic performances.

Oder (ō'dĕr), a river of Germany, which rises in the Moravian table-land, 14 miles east of Olmütz; flows for about 50 miles through Moravia; forms the frontier between Prussian and Austrian Silesia; becomes navigable at Ratibor; traverses the provinces of Silesia, Brandenburg and Pomerania; widens into a maritime lake called the Stettin Haff; and enters the Baltic by the three channels of the Peene, the Swine, and the Dievenow; length about 550 miles. The traffic on this river is important, and the principal towns on its banks are Breslau, Glogau, Frankfort, Küstrin and Stettin.

Odessa (ō-des'sa), a Russian seaport in the government of Kherson, situated on the Black Sea, between the mouth of the Dnieper and Dniester, on the bay of Odessa. After the cession of Bessarabia by the Peace of Jassy in 1792, Catharine II fixed on this spot, then containing only a few houses, as a commercial emporium. The roadstead is large and deep, but dangerously exposed to easterly winds. The shipping, however, is protected in three large harbors inclosed by moles, and the city is fortified in the modern style. Odessa is situated on the edge of a sterile plateau which

here sinks abruptly to the sea. The streets are straight, wide, and cross each other at right angles; there are some fine promenades, two public gardens, and numerous public buildings. The educational institutions include a university founded in 1865. Odessa is one of the chief wheat ports in the East, while wool, timber, hemp, flax, iron, coal, etc., are among the staple exports. Besides the maritime trade, Odessa carries on a large overland trade by rail with Germany, Austria, France, Switzerland and Italy. Odessa was partially bombarded in 1854 during the Crimean war, and was devastated by riots in 1905. Pop. (1910) 620,200.

Odin (ō'din), or WODEN, the chief god of the Scandinavian mythology, the omniscient ruler of heaven and earth, having his seat in Valaskjalf, where he receives through his two ravens tidings of all that takes place in the world. As war-god he holds his court in Valhalla, where all brave warriors arrive after death and enjoy the tumultuous pleasures they delighted in while on earth. His wife is Frigga. The fourth day of the week, Wednesday, derived its name from this deity. See *Northern Mythology*.

Odoacer (ō-dō-ā'sèr), the first barbarian king or ruler of Italy after the fall of the Western Empire, A.D. 476 to 493. He was of German origin, the son of Edico or Idico, hereditary head of the Scyrri tribe, and received his early training in the camp of Attila, king of the Huns. He afterwards journeyed into Italy, and joined the imperial guard of the Roman army. He was chosen head of the barbarian confederates, and having overthrown Romulus Augustulus, the last of the Roman emperors, he assumed the title of king in 476. Out of policy he paid court to the Byzantine emperor Zeno, from whom he received the title of *Patricius* or Patrician. He ruled with vigor and wisdom. In 489 Italy was invaded by the Ostrogoths under Theodoric, and in repeated battles Odoacer was defeated, being finally besieged in Ravenna, on the fall of which city he was assassinated.

Odometer (o-dom'e-tèr). Same as *Hodometer* (which see).

O'Donnell (ō-don'el), LEOPOLD, Duke of Tetuan, Marshal of Spain, born in 1809; died in 1867. He was descended from an Irish family long settled in Spain; entered the army and became a colonel; fought against the Carlists in 1833; drove Espartero from power in 1843; was minister of war in 1854, and prime minister in 1856 and 1858. He commanded with success in the campaign against the Moors 1859-60, being then created Duke of Tetuan. He was at the head of ministries in 1863 and 1865-66.

O'Donovan (ō-don'o-van), JOHN, Irish Celtic scholar, born in 1809; died in 1861; published (with Prof. O'Curry) the *Brehon Laws*, *Annals of the Four Masters*, etc.—His son, EDMOND O'DONOVAN (born 1838), war-correspondent and traveler, published the *Merv Oasis*, and was killed in the Soudan in 1883.

Odontoglossum (o-dont-o-glos'um), an extensive genus of orchids, natives of Central America, much prized by cultivators for their magnificent flowers, which are remarkable both for their size and the beauty of their colors. A considerable number of species

Odontoglossum Alexandræ.

have been introduced into Europe, and grow well in a moderate temperature. *O. crispum* or *O. Alexandræ* is a superb flower, and is named after the Princess of Wales.

Odontophore (o-don'to-fōr), the so-called 'tongue' or masticatory apparatus found in the mouth of the three classes of higher mollucs—the Gasteropods, Pteropods and Cephalopods—which are thus collectively known as the Odontophora. This structure consists of a gristly portion, which supports a ribbon or strap-like band provided with flinty or siliceous teeth variously disposed in a transverse manner.

Odonthornithes (o-dont-or'nith-ēz), a name for certain fossil birds characterized by having teeth, as the hesperornis and ichthyornis (see those articles).

Odysseus (o-dis'ūs). See *Ulysses*.

Odyssey (od'is-sl), an epic poem attributed to Homer, in which the adventures of Odysseus (Ulysses) are celebrated. See *Homer*.

Œcolampadius (e k-ol-am-pā'di-us), JOHANN, an early Protestant writer, born of a Swiss family at Weinsberg, in Suabia, in 1482; died in 1531. His proper name was Heussgen or Hussgen, which, according to the custom of the time, he converted into Œcolampadius. He studied law at Heidelberg and Bologna; became tutor to the sons of the elector-palatine; afterwards prepared himself for the ministry and accepted a call as preacher to Basel. When Luther spread his doctrine of reform it was accepted by this Swiss preacher, who fearlessly proclaimed his new faith (1522) from his pulpit at Basel. Subsequently, however, he took the view of Zwingle regarding the Lord's Supper, and on this point disputed with Luther and Calvin. Among the works which he wrote in defense and furtherance of the Reformation are *De Ritu Paschali*, and *Epistola Canonicorum Indoctorum ad Eccium*.

Œcumenical (ē-kū-men'i-kal; Greek, *oikoumenikos*, pertaining to the whole inhabited world), universal, an epithet applied to the general councils of the church. From the time of the Council of Chalcedon (451) the patriarchs of Constantinople took the title of œcumenical, in the same sense as the epithet Catholic is used in the Western Church. See *Council*.

Œdema (ē-dē'ma), a swelling occasioned by the presence of water which collects in the interstices of the cellular tissues. The subcutaneous cellular tissue is the most frequent, but not the only, seat of œdema. The other forms which are most frequently recognized during the life of the patient are œdema of the lungs and of the glottis. Œdema of the brain is of less frequent occurrence and less easily recognized, and œdema of the submucous and subcellular tissue seldom produces symptoms sufficiently decisive to determine their nature. When the disease is associated with erysipelas, deep-seated suppuration, or a morbid state of the circulation, it is attended with great danger.

Oedenburg (eu'dēn-burh), a town of Western Hungary, capital of the county of the same name, on a plain near Lake Neusiedl, 36 miles s. s. e. of Vienna. It is well built, and has manufactures of woolen, linen, cotton cloth, sugar-refining, etc. Pop. 33,478.

Œdipus (ed'e-pus), in ancient Greek legend, son of King Laius of Thebes, was exposed as an infant—on account of an oracle saying that Laius would be killed by his son—and was brought up at the court of Corinth. Having solved the riddle of the Sphinx he became king of Thebes, unknowingly killed his own father and married his mother Jocasta—a fate foretold by the Delphic oracle. On realizing what had been done Jocasta hanged herself, and Œdipus put out his own eyes. This story has been used by the poets to symbolize the helplessness of man before Fate. The *Œdipus* of Æschylus and Euripides are lost, but the *King Œdipus* and *Œdipus at Colonos* of Sophocles remain. The story has also been made the subject of tragedies by Corneille, Voltaire, Chénier, Dryden and Lee.

Oehlenschläger (eu-lēn-shlā'gēr), ADAM GOTTLOB, born in a suburb of Copenhagen in 1779; died in 1850. His education was desultory; he tried the stage under the training of Rosing; entered the University of Copenhagen in 1800, and published his first volume of poems in 1803; was soon recognized as the chief Danish poet; received a government grant which enabled him to visit Germany, France, Switzerland and Italy (where he met Goethe, Fichte, Madame de Stäel), and thereby deepened his interest in the new Romantic movement spreading through Europe. His finest works, such as *Baldur hin Gode*, *Palnatoke*, *Axel og Valborg*, and the tragedy of *Hakon Jarl*, were written at this period. Returning to Denmark in 1810, after an absence of five years, he was appointed professor of æsthetics in the University of Copenhagen. In the controversy which his writings occasioned Oehlenschläger took no personal part, but continued to write almost to the end, his chief works, besides those above-mentioned, being: *Helge*, *Hroars Saga*, *Nordens Guder*, *Erik og Abel*, *Dronning Margrethe* and *Dina*.

Oeil-de-bœuf (ē'il-de-buf; Fr., 'ox-eye'), applied in architecture to the round or oval openings in the frieze or roof of a large building to admit light.

Oeland (eu'lānt), a Swedish island in the Baltic, on the east coast of Sweden opposite Kalmar, and separated from the mainland by a sound which has an average breadth of 10 miles. In length it is 85 miles, its breadth averages about 4 miles, and the population is 30,408.

Oels (euls), a town of Prussia, in the province of Silesia, 17 miles northeast of Breslau, on the Oelsa. It has manufactures of agricultural implements,

and several oil and other mills. Pop. 10,940.

Oelsnitz (eulz'nits), a town of Germany, in Saxony. Pop. 18,906.

Oelwein (ōl'win), a city of Fayette Co., Iowa, 14 miles N. of Independence. It has railroad, machine shops, farming and dairying industries, etc. Pop. 6028.

Oerebro. See *Orebro.*

Oersted. See *Orsted, Hans Christian.*

Oesel (eu'zl), an island of Russia, government of Livonia, in the mouth of Riga; length about 80, greatest breadth about 40 miles. Its coast is generally bold and its interior undulating, and the climate is much milder than on the adjoining mainland. It raises corn, hemp, flax, and the fisheries are valuable. Pop. 60,000.

Œsophagus (ē-sof'a-gus), or GULLET, the membranous and muscular tube which leads from the pharynx or back part of the mouth to the stomach. In man the length of the gullet is from 9 to 10 inches. It begins at the fifth cervical or neck vertebra, at a point corresponding with the cricoid cartilage of the larynx, and it runs in a slightly deviating course downwards to the stomach. Thus in the neck it lies close behind the windpipe; while in the chest it bends to the right side and then to the left before it pierces the midriff or diaphragm—which forms the floor of the chest—by a special aperture existing in that structure. Internally the gullet is lined by mucous membrane, and between the mucous and muscular layers cellular tissue exists. The mucous or lining membrane is thick and of pale color, and is arranged in longitudinal furrows or folds. In the lower animals the modifications of the œsophagus are various. In birds, for instance, it presents the expansion known as the *crop.*

Œstrus. See *Gadfly.*

Œta (ē'tà), a mountain in ancient Greece, forming the south boundary of Thessaly, and separating that country from Central Greece. At the east extremity was the Pass of Thermopylæ. See *Thermopylæ.*

Ofen. See *Budapest.*

Offa, a distinguished king of Mercia, who attained the throne after Ethelbald, on defeating the usurper Beornred, (A.D. 757). He brought Kent under his sway, and reduced the power of Wessex by a defeat inflicted in 777. He also defeated the Welsh, took from them part of their border lands, and to keep them within their new limits erected here the rampart known as Offa's Dyke (which see). Later he murdered Ethelbert, king of East Anglia, and seized his kingdom. He founded the Abbey of St. Albans, and was a liberal patron to the church. He died in 796.

Offa's Dyke, a rampart, the remains of which may still be seen extending along the English and Welsh border from the vicinity of Newmarket, in Flintshire, to Beachley, at the mouth of the Wye; length about 100 miles. Its erection is ascribed to King Offa of Mercia. See above.

Offenbach (of'en-bàh), a town of Germany, Grand-duchy of Hesse, 5 miles E. S. E. of Frankfort (with which it is connected by an electric railway), on the left bank of the Main. It is well built, has an old castle, and is an important commercial and manufacturing center, its industries embracing various chemical products, as aniline, white-lead, vaseline, celluloid, etc.; metal goods, leather goods, paper, etc. Pop. 75,583.

Offenbach, JACQUES, a French composer, born of Jewish parents at Cologne in 1819; died in 1880. He entered the Paris Conservatoire in 1835; became proficient on the violoncello, and for some time played on this instrument in the orchestra of the Théâtre Comique. In 1847 he became conductor at the Théâtre Français, and subsequently opened the 'Bouffes Parisiens,' where he enjoyed immense popularity as the composer of such operas as *Orphée aux Enfers, La Grande Duchesse, La Belle Hélène, Madame Favart, La Barbe Bleue, Geneviève de Brabant* and *La Princesse de Trebizonde.*

Offenburg (ōf'en-burg), a town of Baden, on a hill near the right bank of the Kinzig, 42 miles south of Carlsruhe. It is well built, has a fine town house, merchant-hall, gymnasium, and thriving manufactures. Pop. 15,434.

Offerings. See *Sacrifices.*

Offertory (of'ér-tur-i), that portion of the service of the Eucharist in which the offerings of the congregation are made, whether these consist of bread and wine or alms. The term is used in the Roman Catholic Church to denote that portion of the mass which is being sung when the priest offers the bread and wine: while in the Church of England it is applied to the sentences read from the service when the alms are being collected, or is applied to the alms themselves.

Office (of'is), DIVINE, in the Roman Catholic Church, the entire com-

plement of services which constitute the established order of celebration of public worship. See *Breviary*, *Missal* and *Liturgy*.

Officinal (o-fis'i-nal); (Latin, *officina*, a workshop), in pharmacy, the name applied to the recipes admitted into the pharmacopœia, and in particular to plants used in the preparation of recognized medical recipes.

Offing (of'ing), a nautical term signifying the position of a vessel, or of a portion of the sea within sight of land, relatively to the coast. The offing may be taken to represent that part of the sea beyond the mid-line between the coast and the horizon.

Og, king of Bashan at the time of the conquest of Canaan by the Israelites, by whom he and his people were destroyed.

Ogden (og'den), a city, capital of Weber County, Utah, 37 miles N. of Salt Lake City, at the junction of the Ogden and Weber rivers; served by the Oregon Short Line, the Southern Pacific, Union Pacific, and the Denver and Rio Grande Railways; has large agricultural and mining interests, canneries, machine shops, etc. Iron and coal, occur in its vicinity. Pop. 25,580.

Ogdensburg (og'denz-burg), a city and river port of New York, on the right bank of the St. Lawrence, at the mouth of the Oswegatchie, 72 miles below Lake Ontario, at the head of deep water navigation. It is a place of very extensive trade and has manufactures of flour, lumber, silks, brass goods, leather, pipes, etc. Pop. 18,000.

Ogee (ō'jē), in architecture, a molding consisting of two members, the one concave, the other convex, or of a round and a hollow; otherwise called a *cyma reversa*. (See *Cyma*.) An *ogee arch* is an arch with a similar curve. Ogee is frequently expressed by the two capitals OG.

Ogham (og'am), a particular kind of writing practiced by the ancient Irish and some other Celtic nations.

Ogham Inscription, from a stone found near Ennis.

Its characters (also called *oghams*) consist principally of lines or groups of lines deriving their significance from their position on a horizontal or chief line, under, over, or through which they are drawn, either perpendicular or oblique; curves rarely occur. Authorities differ as to the total number of letters represented in the alphabet, some making sixteen, others twenty-five. Regarding the age of this form of writing it is now supposed that it was used not only in prehistoric times, but also so late as the ninth and tenth centuries. Stones with ogham inscriptions are found in Leinster and Connaught, also in some parts of Wales.

Oglethorpe (ō'gel-thorp), JAMES EDWARD, colonizer, was born at London in 1689; died in 1785. He served as a soldier under Marlborough and Prince Eugene in Germany, and in 1733 formed a colony of insolvent debtors in Georgia. He remained for ten years in Georgia, fought the Spanish invaders, and after his return entered Parliament.

Oglio (ol'yō), a river of N. Italy, which rises in the Alps, drains Lake Iseo, and falls into the Po; length, 150 miles.

Ogoway (ō'gō-wā), OGOWAI, or OGOWE, a river of Africa which enters the Atlantic at Cape Lopez through a large delta on the west coast, about 400 miles north of the Congo. Its course is chiefly in the French Congo Territory, and its chief affluents are the Ivindo and the Ngunie. A number of French stations have been established on its banks.

Ogyges (o-gī'jēz), in Greek mythology, the most ancient ruler of Attica, in whose reign happened a great deluge which destroyed the cities on Lake Copais. Ogyges was originally the name of a sea god.

O'Higgins, AMBROSIO, a South American administrator, was born in County Meath, Ireland, about 1730. He was educated in Spain and afterwards became a trader in Chile. Here he entered the army, rose rapidly in rank, and was captain-general of Chile, 1788–96, and then viceroy of Peru till his death in 1801.

O'Higgins, BERNARDO, son of the preceding, was born at Chillan, Chile, in 1778, was educated in England, and in 1810 took a prominent part in the Chilean insurrection. He was made commander of the patriot army in 1813, was defeated by the Spanish forces in 1814, joined San Martin in his invasion of Chile and aided in the victory of Chacabuco, 1817. He was then made supreme dictator of Chile, and in 1818 proclaimed independence, which was decided by the victory of Maipo, April 5, 1818. His rule was an excellent one, but he was forced to resign by a revolution in 1823, and retired to Peru, dying in 1842.

Ohio (ō-hī'ō), a river of the Mississippi valley, formed by the confluence of the Allegheny from the north and the Monongahela from the south, at Pittsburgh, in Pennsylvania, where it is a navigable stream 600 yards broad. It flows W. S. W., separating the States of Virginia and Kentucky on the south from Ohio, Indiana and Illinois on the north, and enters the Mississippi at Cairo. Its length from Pittsburgh to its junction with the Mississippi is 975 miles; area of basin, 214,000 square miles. The width of the river varies from 400 to 1400 yards; average width, about 800 yards, at its mouth 900 yards. Its principal affluents are the Miami, Kentucky, Wabash, Green, Cumberland and Tennessee.

Ohio, one of the United States, which ranks fourth in point of population, is bounded on the north by Lake Erie and the State of Michigan, west by Indiana, south by West Virginia and Kentucky, east by West Virginia and Pennsylvania; area, 41,060 square miles. In the north the surface is generally level, and in some places marshy; in the east and southeast it is rugged and broken by hills, but never rises into mountains. In its natural state Ohio was covered with dense forests; now they cover but about one-fifth, the trees most abundant being several varieties of oak, maple, ash, black and white walnut, chestnut, beech, poplar, sycamore, linden, etc. The drainage is divided between the Ohio and Lake Erie, the watershed which crosses the State being about 600 feet above lake level. The State forms a plateau of about 800 to 1000 feet above sea level. The Ohio, which receives the far larger share of the drainage, bounds the State partly on the east and wholly on the south, and is augmented from within it by the Mahoning, Beaver, Muskingum, Hockhocking, Scioto and the Great and Little Miami; the former, which washes the northern frontier for 160 miles, receives the Maumee, Portage, Sandusky, Huron, Cuyahoga, Grand and Ashtabula. The climate in the northern parts is characterized by severe winters; the summers and autmuns are mild and agreeable. In the south the winters are very mild, the summers long and often intensely hot. The chief crops are Indian corn (the staple), wheat, oats, rye, buckwheat, barley and tobacco, while the orchard products are important. Apples thrive in some sections, and sugar beet, and other crops are cultivated. The lake fisheries are valuable. Horses, sheep, cattle and swine are reared in great numbers. The dairy product is very large, while the wool clip is one of the largest in the States. Coal underlies a large part of the State, comprising an area of 10,000 square miles, and the output is important, while petroleum, natural gas, sandstone, limestone, grindstone and gypsum are found in many districts. Ohio is an important manufacturing State, due partly to its natural resources and partly to its splendid advantages of transportation. There are over 9000 miles of railways and two canals connect Lake Erie with the Ohio River. The chief industries are iron and steel works, foundries and machine shops, slaughtering, and meat packing, flour and grist mills, printing and publishing, and automobile manufacture. The foreign trade, carried on chiefly with Canada across Lake Erie, is comparatively small; but a very extensive inland trade is carried on. Among the higher educational institutions are the Ohio State University at Columbus and the universities at Athens and Cincinnati; several denominational universities and colleges, etc. Columbus is the capital, but the two largest towns are Cincinnati and Cleveland. Pop. (1910) 4,767,121.

Ohlau (ō'lou), a town of Prussia, in the province of Silesia, 18 miles southeast of Breslau, on the Ohlau, and on the railway to Cracow. Pop. 9233.

Ohlenschläger. See *Œhlenschläger.*

Ohm (ōm), GEORG SIMON, German physicist, born in 1787; died in 1853. He became successively professor of physics at Cologne, director of the Polytechnic at Nuremberg, and professor of physics at the University of Munich. He was the discoverer of what is known as 'Ohm's Law' in electricity (which see); and among his scientific works were *Die Galvanische Kette, Grundzüge der Physik,* etc.

Ohm, the unit of resistance to the passage of electricity adopted by the British Association. A piece of pure copper wire 485 meters long and 1 millimeter in diameter at 0° C. has a resistance of about one ohm. A 'megohm' is a resistance equal to 1,000,000 ohms, and a microhm is a resistance equal to one millionth of an ohm.

Ohm's Law, an important law in electricity, deduced by Professor Ohm, to the effect that *the intensity of the electric current is directly proportional to the whole electro-motive force in operation, and inversely proportional to the sum of the resistances in the circuit.*

Ohnet, GEORGES, a French novelist, born in 1848. His works, which were very popular, have the general title of *Les Batailles de la Vie* ('The

Battles of Life'). Among them are *Le Maître de Forges*, *La Grande Marnière*, *Nimrod et Cie* and *La Femme en Gris*.

Oïdium (ō-id'i-um), a genus of microscopic fungi. *O. Tuckeri* is the vine mildew, parasitical, in the form of a white and very delicate layer, upon the leaves and green parts of vines, and destroying the functions of the skin of the part it attacks.

Oïdium.

See *Oils* and *Fuel*.

Oil-beetle, the name given to coleopterous insects of the genus *Meloë*, and the family Cantharidæ, from the oily-like matter which they exude. The perfect insects have swollen bodies, with shortish elytra, which lap more or less over each other, and have not a straight suture, as in most coleopterous insects.

Oil-bird. See *Guacharo*.

Oil-cake, a cake or mass of compressed linseed or rape, poppy, mustard, cotton, and other seeds from which oil has been extracted. Linseed-cake is much used as a food for cattle, its value as a fattening substance being greater than that of any kind of grain or pulse. Rape-cake is used as a fattening food for sheep. These and other oil-cakes are also valuable as manures.

Oil City, a city of Venango County, Pennsylvania, on the Allegheny, 132 miles N. by E. of Pittsburgh. It is the principal oil market in the Pennsylvania petroleum field, there being numerous oil wells in the vicinity and immense quantities of oil being bought and sold here. There are extensive oil refineries and various manufacturing industries connected with the trade. Pop. 15,857.

Oil-gas, the inflammable gas and vapor (chiefly hydrocarbon) obtained by passing fixed oils through red hot tubes, and which may be used like coal-gas for purposes of illumination. The oil in its passage through the retorts is principally decomposed, with the production of ethylene, marsh-gas, hydrogen, carbonic oxide, benzine, etc.

Oil of Vitriol, the common name of strong sulphuric acid (which see).

Oil-palm (*Elæis guineensis*), an African tree abounding on the west coast of that continent, whose fruit yields palm-oil. See *Palm-oil*.

Oils, the name of certain substances formed within living animal or vegetable organisms, liquid at ordinary temperatures, having a more or less viscid consistence, insoluble in and lighter than water, taking fire when heated in air, and burning with a more or less luminous flame. The oils are usually divided into the *fat* or *fixed oils*, and the *volatile* or *essential oils*. Another division would be into *vegetable oils*, by far the most numerous, and *animal oils*; and as a third popular division, the *mineral oils* (petroleum, naphtha). The fat or fixed oils are subdivided into the *drying* and the *non-drying oils*. The former class includes all oils which thicken when exposed to the air, through the absorption of oxygen, and are converted thereby into varnish, as, for example, linseed, nut, poppy and hemp-seed oil. All the drying oils are of vegetable origin. The *non-drying* oils (which are partly of vegetable, partly of animal origin) when exposed to the air also undergo a change resulting in the formation of acrid, disagreeably-smelling, acid substances, but though they thicken they do not become dry. The fixed vegetable oils (whether drying or non-drying) are generally prepared by subjecting the seeds of the plant to pressure, with or without heat, and they may also be extracted by means of certain solvents. The animal oils are, for the most part, the fluid parts of the fat of the animal, and are separated by heat alone. Vegetable fixed oils all consist of one or more proximate principles. Thus, olive-oil contains chiefly olein, with a little stearin; linseed-oil is composed mainly of linolein. The most important of the drying oils are linseed, hemp, walnut, poppy, candle-nut, sesame, sunflower, madia, saf-flower. Of the non-drying oils the chief are olive, cotton-seed, colza, rape, ground-nut, castor, croton, etc. A certain number of these oils are also known as vegetable fats, from their consistency at ordinary temperatures, such as palm-oil, cocoa-nut oil, shea-butter. The animal oils comprise neat's-foot oil, train-oil, sperm-oil, porpoise-oil, cod-liver oil, shark-oil, etc. The uses of the fixed oils are very various. Many are used as articles of food, others are used in medicine, numbers as lubricants, some in the composition of paints and varnishes; some are important sources of artificial light, and generally when acted on by an alkali they form soaps. A use of oil now coming into some importance is as an agent for calming the waves of the sea in certain circumstances, more especially to prevent them from breaking over a boat and so swamping her. That oil has this effect has been clearly demonstrated

and has been actually tested in violent storms in mid-ocean.

Volatile oils are generally obtained by distilling the vegetables which afford them with water; they are acrid, caustic, aromatic and limpid; they are mostly soluble in alcohol, forming essences. They boil at a temperature considerably above that of boiling water, some of them undergoing partial decomposition. A few of them are hydro-carbons; the greater number, however, contain oxygen as one of their ultimate elements. They are chiefly used in medicine and perfumery; and a few of them are extensively employed in the arts as vehicles for colors, and in the manufacture of varnishes, especially oil of turpentine. They are very numerous, among them being the oils of anise, bergamot, clove, cinnamon, cajeput, lavender, lemon, lime, orange, mint, peppermint, nutmeg, marjoram, rosemary, thyme, etc.

Oil-tree, a name for several trees, especially the *Ricinus communis*, from the seeds of which castor-oil is expressed; and an Indian tree, *Bassia longifolia*, from the seeds of which a thick oil is expressed.

Oil-wells, wells drilled in the earth for the production of petroleum. The first oil well drilled in the United States was in 1859. The present method of drilling has been evolved from the artesian-well system previously adopted for obtaining brine and water. After the selection of the site the first operation consists in the erection of the rig, the chief part of which is the derrick—four strong uprights held in position by ties and braces and resting on strong wooden sills. For drilling the deeper wells the derrick is usually at least 70 feet high, about 20 feet wide at the base, and 4 feet wide at the summit. The boiler usually employed is of locomotive type. To avoid fire it is either at first set at some distance from the well or removed to a safe distance before the drill enters the oil-bearing formation. A large boiler frequently supplies the engines of several wells.

Oise (wäz), a river in France, which rises in the province of Hainaut in Belgium, among the Ardennes, flows southwest across the department of Aisne-et-Oise, and joins the Seine on its right bank about 6 miles below Pontoise; total course, about 180 miles, 100 navigable.

Oise, a northern department in France, bounded by the departments of Somme, Seine-Inférieure, Eure, Seine-et-Oise, Seine-et-Marne and Aisne; area, 2261 sq. miles. The soil is adapted to wheat; but barley, oats and rye are considered the most profitable crops, and a great number of cattle are raised. Pop. (1906) 410,049.

Oka (ȯ-kä'), the name of two rivers, one in European and the other in Asiatic Russia. The former, rising in the government of Orel, joins the Volga at Nijni-Novgorod. The latter, rising in the mountains between China and the government of Irkutsk, flows N. N. E. for 400 miles, and joins the left bank of the Angara at Bratsk.

Okapi (ō-kä'pi), a new species of African animal first brought to notice by Sir H. H. Johnston in 1899, he having obtained the skin of the animal from Mr. K. Eriksson, a Swedish officer in the Congo Free State. This new mammal is about the size of an ox, and is a cloven-footed ruminant, with characteristics approaching both the giraffe and the zebra, but distinct from each. It is about 4½ feet high at the withers. The cheeks

Okapi (*Okapia johnstoni*)

and jaws are yellowish-white, the ears, forehead, a line down to the muzzle, and the short and thick neck are a deep chestnut fringed with black. The colors of shoulders and body range in tone from sepia and jet black to red; the belly is blackish, the tail chestnut with a small black tuft. Zebra-like hindquarters and legs are either snow white or pale cream touched here and there with orange.

Okeechobee Lake (o-kē chō'bē 'Big Water'), a large shallow lake in Southern Florida; about 40 miles in length by 25 in breadth,

and with a maximum depth of 12 feet. Its waters are discharged through the Everglades, but there is no appreciable outlet stream. It contains a few low islands, and a drainage company has been reclaiming since 1881.

Oklahoma (ok-lȧ-hō-mȧ), a State of the American Union, bounded N. by Kansas; E. by Arkansas and Missouri, and S. and W. by Texas; area, 70,057 sq. miles. It comprises the original Indian Territory, out of the western section of which a territory known as Oklahoma was organized in 1890. To this was added a narrow strip of land north of the 'Texas Panhandle,' known as the 'Public Land Strip' or colloquially as 'No Man's Land,' it having remained unappropriated. The new territory was rapidly settled and its people asked for statehood in 1901. The question as to whether Oklahoma and Indian Territory should be admitted as separate States, or combined and admitted as a single State, was settled in 1906, when they were admitted as one State under the name of Oklahoma, the constitution of the new State being signed by President Roosevelt, November 16, 1907. The surface is generally rolling prairie, with plentiful timber in the eastern part. Here a great belt of forest, known as the 'Cross Timbers,' extends from the Arkansas River to the Brazos in Texas. In the south are the Wichita Mountains, connecting the east with the Ozark Mountains of Arkansas. The central part is occupied by the Chautauqua Mountains. The rivers include the Arkansas, with its affluents, the Canadian, the Cimarron, and others, and the Red River, which forms the southern boundary, separating Oklahoma from Texas. The land is generally fertile and agriculture is the principal occupation of the people, corn being the chief crop. Wheat, cotton, oats and hay are also largely grown. Other crops are alfalfa, barley, rye, buckwheat, flax, peanuts, broom corn and Kaffir corn. Vegetables and fruit are also raised. The wealth of summer forage and the abundant pasturage which wheat affords during the winter make the production of live stock of all kinds very profitable. The mineral wealth includes coal, petroleum, asphaltum, lead, zinc, cement rock and building stones. The industries, still in their infancy, but growing, cover flour and grist-mill products, oil, cottonseed and cake, lumber and timber products, etc. Capital, Oklahoma City. Pop. (1910) 1,657,155.

Oklahoma City, a city, capital and largest city of Oklahoma, and county seat of Oklahoma Co. Its industries include large meat-packing plants, cotton oil mills, oil refineries, etc.; but its chief support is its jobbing industry. Pop. 83,559.

Okhotsk (o-hotsk') SEA OF, an inlet of the North Pacific Ocean, bounded on the north by Russian Siberia, east by Kamtchatka, south by Saghalien.

Okwawa (ok-wȧ'wȧ'), Sultan of the Wahechee tribe in German East Africa from 1882. He fought heroically against the German occupation of his country and rather than surrender to the invaders he committed suicide July 19, 1898. Captain Von Prince, leader of the German expedition, found his grave, dug up his bones and carried off the skull to Germany 'for scientific purposes.' In the Great War, 1914-18, the British captured German East Africa, and in the peace treaty it was stipulated that the skull of Okwawa must be returned.

Olaf (ō'laf), or ST. OLAF, one of the most celebrated of the Norwegian kings, great-greatgrandson of Harald Haarfager, and son of Harald, chief of the district of Gränland, was born about 995. He was a friend of the Normans, and a zealous supporter of Christianity. When Canute the Great landed in Norway with an army, Olaf fled to Russia, and in attempting to recover his dominions he was defeated and slain at the battle of Stiklestad (1030). Since 1164 he has been honored as the patron saint of Norway. The order of St. Olaf was founded in 1847.

Olbers (ol'bèrs), HEINRICH WILHELM MATTHÆUS, a German astronomer, born in 1758; died in 1840. He studied medicine in Göttingen, and practiced in Bremen. Astronomy, however, became the ruling passion of his life. He directed his attention particularly to comets, and besides furnishing the most complete lists of the comets whose course had been calculated, in 1815 he discovered a new one, which bears his name. Another discovery for which he is still better known is that of two minor planets, Pallas in 1802, and Vesta in 1807.

Oldbury (ōld'bè-ri), a town of England, in the county of Worcester, in the heart of a mining district, 5 miles W. N. W. of Birmingham. It has manufactures of chemicals, iron and steel works, etc. Pop. 32,240.

Oldcastle (ōld'kas-tl), SIR JOHN, Lord Cobham, was born in the fourteenth century, in the reign of Edward III, and obtained his peerage by marrying the daughter of Lord Cobham. He excited the resentment of the clergy by his zealous adherence to the doctrines of Wickliffe, whose works he collected.

transcribed, and distributed among the people. Under Henry V he was accused of heresy; but the king, with whom he was a favorite, delayed the prosecutions against him, and tried to convince him of his alleged errors, but in vain. He was then cited before the Archbishop of Canterbury (1413), condemned as a heretic, and committed to the Tower, whence he escaped into Wales. Four years afterwards he was retaken and burned alive in St. Giles' Fields (Dec. 1417). He wrote *Twelve Conclusions*, addressed to the parliament of England.

Old Catholics, the name first assumed by a party in the Church of Rome who, led by Dr. Döllinger, professor of ecclesiastical history at Munich, refused to accept the decree of the Vatican Council of 1870, teaching and defining the universal jurisdiction and personal infallibility of the pope. Though united in protesting against the new dogma, they claim to be faithful to the ancient traditional constitution of the church; have never seceded from it, and still hold they have a joint interest in its possessions. The chief centers of the Old Catholic movement were the universities of Germany; but the movement was also set going in Switzerland, where it spread rapidly and widely. At the first Old Catholic congress, held at Munich, September, 1871, it was determined to form separate congregations for the body, and to enter into a close connection with the Church of Utrecht (the so-called Dutch Jansenists). (See *Jansenists.*) After this the Old Catholic movement spread more rapidly. At their second congress, held at Gürzenich in 1872, the Old Catholics resolved to elect Dr. Joseph Reinkens as their first bishop. At the third congress, held in 1873 at Constance, a synodal constitution was adopted. Yearly congresses have since been held, and in 1878 it was resolved that celibacy was not incumbent on priests. The Old Catholic movement in Germany was greatly aided from the first by the position taken up by the imperial government, and still more by the governments of some of the separate states. The imperial government declared the right of Old Catholics to retain what offices they held, and the emoluments of these offices, in spite of any sentence of excommunication passed on them by their bishops. The Old Catholic movement has had a similar course in Switzerland. There also the bishops unanimously supported the new dogma, and excommunicated the priests who rejected it; but there also the state intervened, and zealously protected the latter. At present the Old Catholics of Switzerland number about 80,000, and have a bishop residing at Bern. Those of Germany number 70,000 (their bishop residing at Bonn), while the movement has spread to some extent in France and Austria.

Oldenburg (öld'en-burg), a grand-duchy in the north of Germany, consisting of three separate and distinct territories, viz., the Duchy of Oldenburg, the principality of Lübeck, and the principality of Birkenfeld; total area, 2479 square miles. (1) The first of these divisions, the Duchy of Oldenburg, is bounded on the north by the German Ocean, and on the other three sides by Hanover and Bremen. The country is flat; the soil marshy and sandy, with little cultivation and large tracts of heath and forest; there are no hills or lakes; the principal river is the Weser, and the internal navigation is facilitated by a new canal, which connects the Hunte and the Ems. The chief crops are wheat, oats, rye, hemp and rape. Stock breeding is extensively carried on, and there are industries connected with cotton, wool, jute, etc. (2) The principality of Lübeck, situated in East Holstein, north of the town of Lübeck, is bounded partly by the Baltic; area, 210 square miles, of which the greater part is cultivated. Chief town Eutin (pop. 4574). (3) The principality of Birkenfeld, situated in Rhenish Prussia, is a hilly country with fertile valleys; area, 194 miles; the chief towns Birkenfeld and Oberstein. Oldenburg was raised to the dignity of a grandduchy by the Congress of Vienna in 1815, and the greater part of the two principalities added to it. Pop. (1905) 438,856.

Oldenburg, a town of Germany, capital of the grand-duchy of same name, 24 miles W. N. W. of Bremen, on the Hunte (which is navigable). It has fine promenades on the site of the old fortifications, a grand-ducal palace, public library of 150,000 volumes, picture gallery, etc. Manufactures glass, leather, earthenware, etc. Pop. (1910) 30,242.

Old Forge, a borough of Lackawanna Co., Pa., 6 miles S. W. of Scranton, on the Delaware, Lackawanna and Western R. R. Coal is mined and there are silk mills. Pop. 11,324.

Oldham (öld'am), a town of England, in Lancashire, 6 miles northeast of Manchester. It is very irregularly built, and cannot boast much of its public buildings, though it has a handsome and commodious town hall, lyceum and science and art school, free library and museum, etc. The spinning and weaving of cotton are the staple industries of the town, and employ within it and in its vicinity about

250 miles; and there are several large machine shops, foundries, tanneries, roperies, silk factories, bleach works, etc. Pop. 147,495.

Oldhamia (ōld-hā'mi-a), a fossil organism found in the Lower Cambrian rocks of Wicklow, from its branching form thought by some to be a plant, but by others ranked among the Polyzoa.

Old Red Sandstone, a geological term made popular by the writings of Hugh Miller, and applied by him to the red sandstone which underlies the carboniferous system, in contradistinction to the new red sandstone, which overlies the latter. It is now generally included in the Devonian System. See *Geology*.

Old Tom, a variety of gin manufactured in England.

Oldtown, a village of Penobscot Co., Maine, on the Penobscot River, 12 miles N. N. E. of Bangor. It has extensive water power and large lumber and pulp industries; also manufactures of canoes, etc. Pop. 7000.

Oldys (ōl'dis), WILLIAM, bibliographer, born according to some in 1687, according to others in 1696; died in 1761. He was appointed librarian to the Earl of Oxford, remained ten years in this nobleman's service, and in 1755 was appointed Norroy king-at-arms by the Duke of Norfolk. The works by which he is best known are the British Librarian, a bibliographical treatise, and a *Life of Sir Walter Raleigh*, prefixed to his *History of the World* (1738).

Oleaceæ (ō-le-ā'se-ē), a nat. order of monopetalous exogenous plants, allied to and sometimes united with Jasminaceæ, and chiefly inhabiting temperate climates. The species best known are the olive, lilac and privet.

Olean (ō-lē-an'), a city of Cattaraugus Co., New York, on the Allegheny River, 70 miles S. E. of Buffalo. It has oil and lumber industries, and manufactures of machinery, boilers, etc. Here is a State armory. Pop. 18,834.

Oleander (ō-lē-an'dēr), a plant of the nat. order Apocynaceæ, genus *Nerium*, the *N. Oleander*, known also by the name of rose-bay, a beautiful evergreen shrub, with flowers in clusters, of a fine rose or white color but of an indifferent odor. The plant, especially the bark of the root, is medicinal and to some extent poisonous.

Oleaster (ō-lē-as'tēr), *Elæagnus hortensis* (order Elæagnaceæ), also called wild olive tree, a small tree of the south of Europe and west of Asia, often cultivated in gardens and shrubberies for its blossoms, which are very fragrant. It flowers in May.

Olefiant Gas (ō-lē'fi-ant), the name originally given to ethylene or heavy carburetted hydrogen. It is a compound of carbon and hydrogen in the proportion expressed by the formula C_2H_4, and is obtained by heating a mixture of two measures of sulphuric acid and one of alcohol. It was discovered in 1796. It is colorless, tasteless and combustible, and has an aromatic odor not unlike that of oil of caraway.

Oleic Acid (ō-lē'ik), ($C_{18}H_{34}O_2$), an acid resulting from the action of olive and some other oils upon potash. It enters largely into the composition of soaps, forming with potash soft soap and with soda hard soap.

Olenek (ō-lye-nyok'), a river of Northern Siberia which rises under the polar circle, and enters the Arctic Ocean to the west of the Lena delta; length, about 1200 miles.

Oleomargarine (ō-lē-ō-mär'ga-rin), an artificial butter. See *Margarine*.

Oléron (ō-lā-rōn), an island of Western France, about 1 mile from the coast of the department of Charente-Inférieure, to which it belongs. Greatest length, 18 miles; greatest breadth, 7 miles; area, 96 square miles. With the exception of the west side the surface is generally fertile, producing good corn and wine. It has two towns, Château and St. Pierre, the former fortified. Pop. 17,033. —What are known as the laws of Oléron were a code of maritime laws which long regulated the navigation connected with La Rochelle, Bordeaux, and the coasts of Normandy and Brittany, and were also adopted in other countries, as Spain, the Netherlands and England. These laws were compiled about the end of the eleventh or the beginning of the twelfth century.

Olfactory Nerves (ol-fak'tu-ri), the nerves of smell, the first pair of cerebral nerves or nerves from the brain. They arise chiefly in connection with the cerebral hemispheres, and numerous filaments from them, perforating the ethmoid bone, are distributed over the mucous membrane of the nose. See *Nose*.

Olhão (ol-yā'ŭn), a seaport of Portugal, province Algarve. It is actively engaged in fisheries. Pop. 10,009.

Oli'aros. See *Antiparos*.

Olibanum (ō-lib'a-num), a gum resin used as incense, and obtained from the tree *Boswellia serrata*. It is yellow of color, bitter in taste, and

diffuses an aromatic odor when burned. See *Frankincense*.

Olifant River. See *Elephant River*.

Oligarchy (ol'i-gär-ki; from Gr. *oligos*, few, and *archē*, government), that form of government in which the supreme power is placed in the hands of a small exclusive class.

Oligocene (ol'i-gō-sēn), a geological system of the Tertiary age, lying between the Eocene and Miocene systems, and formerly included in these. Its strata is widely distributed and rich in fossils, largely composed of modern genera, though with many strange mammalian forms.

Oligoclase (ol'i-gō-klās), a soda lime felspar, the soda predominating; it occurs in granite, porphyry, and other igneous rocks.

Olinda (ō-lēn'da), a seaport town of Brasil, in the province of Pernambuco, on the Atlantic, 3 miles north of Recife, with which it unites in forming what is commonly called the city of Pernambuco. Pop. 8000.

Oliphant (ol'i-fant), LAURENCE, son of Sir Anthony Oliphant, chief-justice of Ceylon, was born in England in 1829; died in 1888. He studied law at the University of Edinburgh, traveled extensively in Southern Russia and the Crimea; became private secretary to Lord Elgin when he was governor-general of Canada, and subsequently accompanied him (1857) on his mission to China and Japan. Returning to Europe he became Paris correspondent to the *Times;* entered parliament for the Stirling Burghs in 1865, but retired three years later; and, after his attempt to found a Socialistic religious community in Portland, New York, had failed, he resided principally in Palestine, near Mount Carmel. Besides frequent contributions to periodical literature he published *Journey to Khatmandu*, *The Russian Shores of the Black Sea*, *Minnesota and the Far West*, *The Transcaucasian Campaign of Omer Pasha*, and various other works, including *Altiora Peto* (a novel), *Masollam* (a novel), *Sympneumata* and *Scientific Religion*, the last works exhibiting his peculiar mysticism and tendency to spiritualism. These mystical views led him in later life, in common with his mother, Lady Oliphant, to join the ascetic community of the American mystic, Thomas Lake Harris. He died in 1888.

Oliphant, MRS. MARGARET, maiden name Wilson, novelist; born near Musselburgh, Scotland, in 1820. Her first work of fiction appeared in 1849 under the title of *Passages in the Life of Mrs. Margaret Maitland*, and from that time she maintained a high place as a novelist by such works as *Adam Greeme*, *The Chronicles of Carlingford*, etc. Besides this fictional work she wrote a *Life of Edward Irving*, a *Life of Francis of Assisi*, *Memoir of Count Montalembert*, biographies of Molière, Cervantes and Sheridan, *Historical Sketches of the Reign of George II*, *The Makers of Florence*, *The Makers of Venice*, a *Literary History of England* and a *Memoir of Principal Tulloch*. She died in 1897.

Oliva (ō-lē'vä), a village in Prussia, in the province of East Prussia, not far from Dantzig. In a Cistercian abbey in this village a peace was concluded, May 3, 1660, which terminated the war between Sweden, Poland, the emperor, and Brandenburg. Pop. 5682.

Olivarez (o-le-vä'reth), GASPAR DE GUZMAN, COUNT OF, Spanish statesman, born in 1587; died in 1645. He was educated at the University of Salamanca, afterwards appointed gentleman of the bedchamber to the Prince of Asturias, and when his royal master succeeded to the throne as Philip IV, Olivares was appointed prime minister. For twenty-two years (1621-43) his power was almost unlimited, but the severity of his administration ultimately caused revolt in Catalonia and Andalusia, while the Portuguese threw off the Spanish yoke. The end of his policy was public discontent and his own private disgrace. He was confined by the king at Toro, where he died.

Olive (ol'iv), a fruit tree of which there are several species, the most important being the common olive (*Olea europæa*, nat. order Oleaceæ). It is a low branching evergreen tree, in height from 20 to 30 feet, with stiff narrow dusky-green or bluish leaves. The flowers are small and white, and are produced in axillary racemes, and appear in June, July and August. The fruit is a berried drupe of an oblong spheroidal form, with a thin, smooth, and usually blackish skin, containing a greenish soft pulp adherent to a rough, oblong, and very hard stone. It is bitter and nauseous, but replete with a bland oil. The olive is a native of Syria and other Asiatic countries, and flourishes only in warm and comparatively dry parts of the world. It grows slowly, and is very long-lived. The olive tree has in all ages been held in peculiar estimation. It was anciently sacred to Minerva. Olive wreaths were used by the Greeks and Romans to crown the brows of victors, and it is still universally regarded as an emblem of peace. The wood of the olive

tree is beautifully veined, and has an agreeable smell. It is in great esteem with cabinet-makers on account of the fine polish of which it is susceptible. But the olive tree is principally cultivated for the sake of its oil, which is contained in the pericarp or pulp. (See *Olive-oil.*) It is cultivated for this purpose in Italy, France, Spain, Malta, Turkey, the Ionian Islands, California, Florida, etc., and easily propagated either by seed, grafting, or slips. It is very tenacious of life. The fruits are also used at table, not in the natural state, but generally pickled, the green unripe fruits being deprived of part of their bitterness by soaking them in

Olive (*Olea europæa*).

water, and then preserved in an aromatized solution of salt. Another species of olive, the *O. fragrans*, inhabits China, Japan and Cochin-China. The flowers are used by the Chinese to mix with and perfume their tea, and also, together with the leaves, for adulterating tea. The only American species (*O. americana*) is in some districts called *devil-wood*, on account of the excessive hardness of the wood and the extreme difficulty of splitting it.

Olivenza (ō-lē-vān'tha), a town of Spain, province of Badajos, on the left bank of the Guadiana, 15 miles south of the town of Badajos. Pop. 9066.

Olive-oil, a fixed oil obtained by expression from the pulp of the ripe fruit of the olive (*Olea europæa*). It is an insipid, inodorous, pale-yellow or greenish-yellow, viscid fluid, unctuous to the feel, inflammable, incapable of combining with water, and nearly insoluble in alcohol. It is the lightest of all the fixed oils. Olive-oil is much used as an article of food in the countries in which it is produced, and to a smaller extent in other countries, to which it is exported also for medicinal and manufacturing purposes, etc. The best olive-oil is said to be made in the vicinity of Aix, in France; the kind known by the name of Florence oil is also of a superior quality, and is mostly used for culinary purposes. By far the largest portion of olive-oil brought to the United States is imported from Italy. Spain also sends a large quantity. The oil is also known as *Sweet-oil.*

Olives, Mount of, or Mount Olivet, a hill on the east side of Jerusalem, from which it is separated by the Valley of Jehoshaphat and the brook Kedron. The principal summit has the name of Mount of Ascension, and here stands the modern Armenian church of that name. But according to the Scripture the scene of the ascension was near to Bethany (Luke xxiv, 50), which is on the further side of the hill from Jerusalem. A short way above Bethany is a nearly flat part of the hill on which hundreds of people might congregate, and there is little doubt that that is truly the place from which our Lord ascended. At the foot of the hill lay the Garden of Gethsemane, and round its eastern and southern side is the road by which our Lord made his triumphal entry into Jerusale..

Olivetans (o-liv'e-tanz), an order of Benedictine monks and nuns founded about the beginning of the fourteenth century by Tolomei of Siena in Italy, and named from Monte Oliveto Maggiore near that city, where their first monastery was erected.

Olivine (ol'i-vēn), called also *chrysolite*, is a mineral, olive-green in color, occurring in lava, basalt, and certain meteorites. Analysis proves it to be silicate of iron and magnesium, agreeing with the general formula $(Mg, Fe)_2SiO_4$.

Olla Podrida (ol'a pō-drē'da), the name of a favorite dish with all classes in Spain. It consists of a mixture of all kinds of meat cut into small pieces, and stewed with various kinds of vegetables. Hence the term is also applied to any incongruous mixture or miscellaneous collection.

Ollivier (o-liv-i-ā), Emile, born at Marseilles in 1825; studied for the bar and became an advocate at Paris in 1847; took part in the revolution of 1848, and was appointed commissary-general at Marseilles under the republic. He afterwards entered the legis-

lative assembly, where he became one of the leaders of the Liberal opposition. When the empire was established in France Ollivier gradually severed himself from his former political associates, and the severance was final when he, in January, 1870, accepted the invitation of Napoleon III to form a ministry. It was this ministry which declared war with Germany in July, 1870, and which, as a result of the repeated French disasters, was overthrown with disgrace in August 1870. He died August 20, 1913.

Olmsted (olm'sted), FREDERICK LAW, landscape architect, was born at Hartford, Connecticut, in 1822, died in 1903. With Calvert Vaux he prepared the design for Central Park, New York. He was consulted about the park systems of Boston, Chicago, Buffalo, other cities, the United States Capitol grounds, and the grounds of the World's Columbian Exposition at Chicago. His son, of the same name, born in 1870, has been prominent in work of the same nature and is landscape artist of the park system of Boston.

Olmütz (ol'mütz), a city of Austria, in Moravia, 38 miles n. e. east of Brünn, on the March, which forms almost a complete circle around it. It has a cathedral, a fine Gothic building erected by King Wenzel III, who was murdered here in 1306; and its manufactures are chiefly of linen and woolen cloth. Olmütz was formerly the capital of Moravia, and is still the see of an archbishop. Pop. (1910) 22,245.

Olney (ol'ni), RICHARD, lawyer, born at Oxford, Massachusetts, in 1838. He became a prominent lawyer in Boston, in 1893 was appointed Attorney-general by President Cleveland, and in 1895 Secretary of State. He was active in settling the Venezuela boundary question in 1896.

Olney (ol'ni), a city, the county seat of Richland County, Illinois, 63 miles s. w. of Terre Haute, Ind. It has foundries and machine shops, flour mills, railroad shops, etc. Pop. 5801.

Olonets (o-lō'nyets), a northern government of Russia; area, 57,439 square miles. The surface is generally flat; the drainage is shared in unequal proportions between the Baltic, White Sea, and Volga. The most marked natural feature of the government is its lakes (of which Omega is one), streams, and morasses. The climate is rigorous in the extreme. Timber constitutes almost the whole wealth of the government. The chief means of support of the inhabitants are forestry, hunting and fishing. The capital is Petrozavodsk. Pop. 401,100.

Oloron (ō-lō-rōn), a town of France, department of Basses-Pyrénées, 14 miles southwest of Pau, on a hill near the Gave, here crossed by a lofty bridge connecting Oloron with Sainte Marie. It has manufactures of cutlery, blankets, etc. Pop. 7482.

Olot (ō-lōt'), a town of Spain, in Catalonia, province of Gerona, 55 miles north of Barcelona, in a basin nearly enclosed by a circle of volcanic hills. There are cotton and woolen manufactories, tanneries, etc. Pop. 8017.

Ols See *Oels*.

Olympia (ō-lim'pi-a), county seat of Thurston County, Washington, and capital of the State, is situated at the southern extremity of Puget Sound, [illegible] miles [illegible] of Seattle. It has abundant water-power and is in the midst of a rich timber region, for which it is the log market. There is an important oyster industry. Pop. 12,000.

Olympia, a locality in Greece, the scene of the famous Olympian games, a beautiful valley or plain lying in the middle portion of the ancient district of Elis, in the western part of the Peloponnesus (Morea). Here were collected thousands of statues of the gods and of victors in the games, treasure houses full of votive offerings, temples, altars, tombs, and in a word the most precious treasures of Grecian art. Among the buildings were the Olympieum or great temple of Zeus, containing the colossal statue of the god by Phidias; the Heræum or temple of Hera; the Metroum or temple of the mother of the gods; the twelve treasure houses; the Prytanêum, in which the Olympic victors dined after the contests; the Bouleuterion, in which all the regulations regarding the games were made; and these were all surrounded with walls, having a length of about 1800 feet and a breadth of 1500. Recent excavations have brought to light numerous valuable fragments of sculpture, bronzes, coins, terra cottas, etc.

Olympiads (ō-lim'pi-adz), the periods of four years between each celebration of the Olympic games, by which Greeks computed time from 776 B.C., the first year of the first Olympiad, till 394 A.D., the second year of the 293d Olympiad.

Olympias (ō-lim'pi-as), the wife of Philip II, king of Macedonia, and the mother of Alexander the Great. Her haughtiness, and more probably her infidelity, led Philip to repudiate her, and to marry Cleopatra, the niece of King Attalus. The murder of Philip, which soon followed this disgrace (B.C.

336), some have attributed to the intrigues of Olympias. After the death of her son and his successor, Antipater, she was besieged by Cassander in Pydna, and, having to surrender, she was put to death after a mock trial (316 B.C.).

Olympic Games (ō-lim'pik), the great national festival of the ancient Greeks, celebrated at intervals of four years in honor of Zeus, the father of the gods, on the plain of Olympia (which see). The name is also applied to modern revivals of the ancient Greek games, in which contestants from all over the world take part. They have hitherto taken place as follows: Athens, 1896; Paris, 1900; St. Louis, 1904; Athens, 1906; London, 1908; Stockholm, 1912. Public interest in the contests has greatly increased and over 60,000 people witnessed those at Stockholm. The games consisted of track and field events, swimming, diving, rowing, sailing, bicycling, shooting, wrestling. The United States has taken first place in track and field events since 1896 and in 1912 scored 85 points, while the other nations together scored only 94.

Olympus (ō-lim'pus), the name given to several mountain ranges by the ancients. The most celebrated of them was situated in Thessaly, at the eastern extremity of the range called the Cambunian Mountains, and now called by the Greeks Elymbos or Olymbos. It rises to the height of 9700 feet above the level of the sea, and was the highest mountain in ancient Greece. The earliest Greeks looked upon it as the highest of all mountains, as the central point of the earth's surface, and as the place where the gods dwelt. In after-times, when the ideas of men respecting the universe and the gods were enlarged, the supreme beings were said to reside in the exterior sphere of the heavens, evolving round the space which embraced the planets; and this new abode of the gods above the firmament of heaven received the name of Olympus. The other most important elevation bearing this name was the Mysian Olympus, a range of lofty mountains in the northwest of Asia Minor.

Olyphant (ol'i-fant), a borough of Lackawanna County, Pennsylvania, about 8 miles N. N. E. of Scranton and 8 miles from Carbondale. It is a coal-mining town. Pop. 8505.

Om (ōm), a mystic word to which great sanctity is attached both by the Brahmans and the Buddhists.

Omaha (ō'ma-hą), a city of Nebraska, the seat of Douglas County, situated on the Missouri, opposite Council Bluffs, Iowa, about 600 miles from its confluence with the Mississippi and 498 miles west of Chicago. It is an important railway center of the middle west, and is the commercial and manufacturing metropolis of the State. It has large smelting works, steam engine and boiler works, also gasoline motor car shops, and is the terminus of the Union Pacific, with repair and construction shops. It is also the center of a large agricultural and livestock market; is the third largest packing city in the United States, and is rapidly becoming an important grain market. There are excellent educational institutions, including the University of Omaha. It is the headquarters of the Department of the Missouri and has two army posts, Fort Omaha and Fort Crook. On March 23, 1913, the city was swept by a tornado, destroying much property and life; but the work of rebuilding was immediately begun. Pop. 52,904.

Oman (ō-mān'), or MUSKAT, a sultanate in the southeast of Arabia, partly on the Persian Gulf, partly on the Indian Ocean; area, estimated at 82,000 square miles. The chief features of the country are stretches of barren sand or rock, mountains reaching the height of 10,000 feet; fertile valleys and plains, yielding abundance of grain, sugar, fruits, cotton, coffee, etc. The inhabitants are mostly Arabs, but there is a considerable mixture of Persians, Hindus, Africans, etc. The form of government is a monarchy (the ruler being styled Imam), limited by a powerful aristocracy with hereditary privileges, and the prescription of popular rights. Zanzibar and its dependencies formerly belonged to Oman. The capital is Muskat. Pop. (estimated) 1,000,000.

Omar I (ō'mär), successor of Abu-bekr, and second caliph of the Mussulmans after Mohammed. He was born about 582, became a follower of Mohammed about 615, and succeeded Abu-bekr in 634. His caliphate is celebrated for the great extension of Mohammedanism which took place while it lasted. In 638 the conquest of Syria was completed by his general Abu-Ubeida; his general, Amru, was equally successful in Egypt in 638 to 640; and when in 638 Jerusalem was compelled to surrender, Omar hastened thither himself in order to dictate the terms. Omar's generals likewise invaded Persia, defeated the army of Yezdegerd, and conquered the capital and kingdom. The Mussulmans pursued their conquests far into Africa, but Omar did not live long to enjoy his glory. In 644 he was mortally wounded at Medina by a slave. He established the custom of dating from the Hejira.

Omar Khayyam (ki-yam'), a Persian poet, astronomer and mathematician, born at Nishapur in Khorasan; died there in 1123. His scientific works, which were of high value in their day, have been eclipsed by his *Rubaiyat*, a collection of about 500 epigrams in praise of wine, love, and pleasure, and at the same time depressingly pessimistic. A portion of the *Rubaiyat* was translated into English verse by Edward Fitzgerald (1859-79), and a critical text and translation was made by E. H. Whinfield in 1883. Other translations have been made and the work has become highly popular.

Omar Pasha. See *Omer Pasha*.

Omasum (ō-mā'sum), the third compartment of the stomach of ruminant mammals, otherwise known as the psalterium or 'manyplies.'

Ombay (ōm-bī'), an island in the Indian Archipelago, about 18 miles northwest of Timor. It is about 1500 square miles in extent, and is chiefly inhabited by Malays and Papuans. There is a Dutch settlement, with a trade in pepper, birds'-nests, etc.

Omega (ō-meg'a; Greek, signifying 'great *o*'), the name for the Greek long o. It was the last letter in the Greek alphabet, as alpha was the first; and from the expression in Revelation (chap. i, 8), 'I am Alpha and Omega, the beginning and the ending,' the signs A Ω became with the Christians symbolical hieroglyphics. Inscriptions on tombstones, public documents, etc., very often began with these two letters, meaning, 'In the name of God.'

Omens (ō'menz), certain signs or phenomena supposed to portend some impending good or evil fortune. Among the ancient Romans the taking of omens was a public institution of great importance. See *Augurs, Auspices*.

Omer (ō-mèr), St., a town in France, in the department of Pas-de-Calais, in a marshy district on the Aa, which is here navigable 23 miles southeast of Calais. It ranks as a fortress of the first class, and it has a fine cathedral, and remains of the abbey church of St. Bertin, at one time the noblest Gothic monument of French Flanders. It manufactures woolen cloth, thread, starch, etc., and has an important trade. Pop. 16,882.

Omer Pasha (o'mer pa-shä'), a Turkish general, born in the Austrian dominions in 1806; died at Pera in 1871. Under his original name of Mikail Lattas he served for some time in an Austrian regiment; fled afterwards, for an unknown reason, into Bosnia; adopted the Mohammedan faith; taught writing in a military school; and ultimately became teacher to Prince Abdul-Medjid. When his pupil became sultan, Omer rapidly rose in rank; distinguished himself in the Syrian campaign of 1840; became military governor of Lebanon; quelled various revolts in Bosnia, Albania, etc.; and in the Russian campaign of 1853 he was appointed commander-in-chief of the Turkish army. In this capacity he made a successful stand against the Muscovite invasion, defeating the Russians at Kalafat on the Danube and at Eupatoria in the Crimea. He retired from public life in 1869.

Ommiades, or Ommeyades (om'i-ādz), the second dynasty which held the Arabian caliphate until they in turn were superseded by the Abbasides. The founder of the dynasty was Moawiyah, who claimed the throne after the death of Othman, his cousin, and became fully recognized as caliph after the death of Ali his rival and Hussein his son. See *Caliph*.

Omnibus (om'ni-bus), a Latin word signifying 'for all,' and now applied in several languages to the well-known vehicle used for the conveyance of passengers at a cheap rate. The first conveyances of the kind were those which came into use in Paris (March, 1662) in consequence of an edict of Louis XIV, but they soon fell into disuse, and were not again reintroduced until 1827. A Mr. Shillibur started the first omnibus in London in 1829, and they were introduced into New York in 1830, and Amsterdam in 1839. They have been superseded very generally by the street car.

Omphale (om'fa-lē), in ancient Greek legend, a queen of Lydia. Hercules was sold to her for a slave by Hermes (Mercury), and performed some remarkable exploits in her service. Omphalē governed with great severity, and was both licentious and cruel.

Omsk (omsk), a chief town in the Russian government of Akmolinsk, situated in Western Siberia at the junction of the Om with the Irtish, 280 miles southeast of Tobolsk. It is an important military station, contains a school for interpreters and a military school for the Cossacks and has a good trade. Pop. (1911) 129,422, including many exiles.

On. See *Heliopolis*.

Onager (on'a-gèr), the wild ass (*Equus Asinus*), originally inhabiting the great deserts of Central Asia, and still found there in its wild state. See *Ass*.

Onagraceæ (on-a-grā'se-ē), a nat. order of polypetalous exogenous plants, herbs, trees and shrubs, with opposite or alternate simple leaves, and often handsome flowers. They have an inferior ovary, and all the parts of the flower are four or a constant multiple of that number. The species chiefly inhabit the more temperate parts of the world, and have white, yellow, or red flowers; such as the great American genus *Œnothêra* or evening primroses, the common wild willow-herbs (*Epilobium*), and the fuchsias of our gardens.

Onega (ō-nē'ga), a river in Russia, which, issuing from Lake Latcha, government of Olonetz, flows first northeast, then northwest, and after a course of about 270 miles falls into the White Sea at the southeast extremity of the Gulf of Onega.

Onega, a lake in Russia, near the center of the government of Olonetz, and, after Lake Ladoga, the largest lake in Europe, covering an area of about 3800 sq. miles. It has numerous creeks, bays and islands; is well supplied with fish; and discharges itself into Lake Ladoga by the Svir.

Oneglia (o-nel'yä), a seaport of North Italy, province of Porto Maurizio. Pop. 7357.

Oneida (ō-nī'da), a city of Madison County, New York, on Oneida Creek, 26 miles E. of Syracuse. Large quantities of hops and dairy products are shipped, and there are knitting and flouring mills, manufactures of iron, chairs, caskets, automobiles, etc. Pop. 8317.

Oneida, a lake in the State of New York, the western and lower end of which is about 18 miles southeast of Lake Ontario. It is 20 miles long, 4 miles broad, and its waters find a vent by Oneida River into Lake Ontario at its southeast corner, after they have united with the Seneca and formed the Oswego River.

Oneida Community, a religious communistic society, otherwise known as Perfectionists (which see).

Oneidas, once a North American Indian tribe inhabiting Central New York, and belonging to the Iroquois community of tribes. A remnant in Wisconsin are well advanced in civilization.

Oneonta (ōn-ē-on'tä), a village of Otsego Co., New York, on the Susquehanna River, 60 miles N. E. of Binghamton. It has a State normal school, railroad shops, a silk mill, etc. Pop. 9491.

Onion (un'yun), a well-known liliaceous plant of the genus *Allium*, the *A. Cepa*, the bulbous root of which is much used as an article of food. It is a biennial herbaceous plant with long tubulated leaves, and a swelling, pithy stalk. The peculiar flavor varies much according to the size of the bulb, the small reddish onions having much more pungency than the larger ones. The onion may be grown from the tropics to the coldest verge of the temperate zone. There are at least twenty varieties, the Bermuda, Spanish and Portuguese being among the most esteemed.

Onkelos (onk'e-los), the author of the celebrated Targum or Chaldee paraphrase of the Pentateuch which bears his name, is asserted by the Babylonian Talmud to have lived in the time of the celebrated teacher Gamaliel, but is supposed from internal evidence to be not earlier than the second and not later than the third century. His version is so faithful, and accords so exactly with the Hebrew text, that it continued till the beginning of the sixteenth century to be chanted in the synagogue alternately with the Hebrew and to the same notes.

Onomacritos (o-n-o-mak'ri-tos), a Greek soothsayer and poet, who lived at Athens in the time of the Pisistratidæ, arranged and explained the so-called oracles of Musæus, and having been detected making an interpolation in one of these, was banished from Athens by Hipparchus about B.C. 516. He is supposed to have been the author of the Orphic hymns.

Onomasticon (o-n-a-mas'ti-kon), a Greek term properly meaning a list of names or words, denotes particularly a dictionary or encyclopædia in which individual subjects or things are mentioned and explained under their own names or head. The oldest work under this name still extant is that of Pollux, executed in the second century B.C., in the Greek tongue.

Onomatopœia (o-nom-a-to-pē'a), the formation of words in such a manner that the sound shall imitate the sense. Thus, in the case of sounds, the words *buzz*, *crash*, *roar*, are evidently formed to imitate the sounds themselves.

Onondagas (on-on-dä'gas), a tribe of Indians, one of the Iroquois tribes, formerly occupied the region from Onondago Lake to Lake Ontario and southward to the Susquehanna River. The remnant of them, less than a thousand in number, are settled partly in Ontario and partly in New York.

Onosander (on-o-san'dēr), more correctly ONESANDER, a writer on military tactics who lived at Rome

in the middle of the first century after Christ, and composed in Greek, under the title of *Strategetikos*, an excellent work on the art of war.

Ontario (on-tā'ri-ō), formerly called Upper Canada and Canada West, a province of the Dominion of Canada, having on the northwest, north and east Manitoba, Kewatin, James Bay and Quebec; on the southeast, south and southwest the St. Lawrence River, the Great Lakes and Minnesota; area 219,-650 sq. miles. Besides the great lakes just mentioned, which partly belong to the Dominion and partly to the United States, Ontario has numerous other lakes, such as Simcoe, Nipissing, Nipigon, and others. The chief rivers are boundary rivers; the Ottawa, Niagara and Albany, the latter entering James Bay, part of Hudson Bay. The Falls of Niagara in part belong to the province. There are no mountains of importance. Agriculture is the chief occupation, and for the most part the soil is of excellent quality. A large part of the province is covered with timber, and this, with the water facilities, makes lumbering one of the chief industries. The climate is inclined to the extreme of hot and cold during summer and winter respectively, but the dryness of the atmosphere makes it very healthy. The minerals include gold, silver, copper, iron, lead, nickel, plumbago, gypsum, marble, salt and petroleum. The richest, most thickly settled, and most highly cultivated portion of the province is the peninsula between the St. Lawrence and Lakes Ontario, Erie and Huron. Here very large crops of wheat are raised; also barley, oats, Indian corn and potatoes, and the fruit-growing farms of some districts yield a plentiful crop of apples, plums, pears, peaches and grapes. Recently the farmer here has turned his attention to stock-raising and dairy farming with encouraging results, which are largely due to the easy accessibility of markets by rail, supplemented by the lake, river and canal navigation. Chief among the manufactures are woolens, cotton, linen, hardware, paper, soap, agricultural implements, steam engines, etc. The educational system of the province provides for the free education of all children in the common schools, and there is also liberal government provision for high schools and colleges, technical institutions, and a university; while there are also colleges and universities not under provincial control. The government is administered at Toronto by a lieutenant governor, assisted by an executive council of seven; while there is also a legislative assembly, elected by ballot for four years, and constituting, with the lieutenant governor, the legislature or parliament. Pop. 2,523,208.

Ontario, Lake, the most easterly of the great lakes of North America, lying along the northeast side of the State of New York, and forming part of the boundary between the United States and Canada; greatest length, 190 miles; greatest breadth, about 55 miles; area, 5400 square miles. It receives the waters of Lake Erie by the Niagara, and discharges its waters by the St. Lawrence into the Atlantic, 1000 miles distant. The Hudson, and the Oswego and Erie canals, form a connection through the United States between it and the Atlantic. It is navigable throughout its whole extent and at all seasons. The most important places on its shores are Toronto, Hamilton, Kingston and Coburg, in Canada and Oswego in the United States.

Onteniente (ōn-tā-nē-ān'tā), a town of Spain, in the province of Valencia, 46 miles south of the town of Valencia. It has manufactures of textiles, paper, etc. Pop. 11,430.

Ontogenesis (on-tō-jen'e-sis), in biology, the history of the individual development of an organized being, as distinguished from *phylogenesis*, or the history of genealogical development, and from *biogenesis*, or life development generally.

Ontology (on-tol'ō-ji), the doctrine of being; a name given to that part of the science of metaphysics which investigates and explains the nature and essence of all things or existences, their qualities and attributes. It is also used as equivalent to metaphysics.

Onyx (on'iks), a semi-pellucid gem with variously colored zones or veins. Any stone exhibiting layers of two or more colors strongly contrasted is called an onyx, as banded jasper, chalcedony, etc., but more particularly the latter when it is marked with white and stratified with opaque and translucent lines. The ancients valued it very highly, and used it much for cameos, many of the finest cameos in existence being of onyx.

Onyx Marble, a very beautiful translucent limestone of stalagmitic formation discovered by the French in the province of Oran, Algeria, and first brought into general notice at the London exhibition of 1862. It is used for the manufacture of ornamental articles.

Oojein. See *Ujjein*.

Oölite (ō'o-lit), a species of limestone composed of globules clustered

together, commonly without any visible cement or base. They vary in size from that of small pin-heads to that of peas. When the grains are very distinct and well-rounded it is called roe-stone; when they are large and pea-like the rock is known as pisolite, pea-grit, or pea-stone. What is known as the Oölite or Oölitic *series* of rocks in geology, consist of a series of strata comprehending the whole of those peculiar limestones, calcareous sandstones, marls, etc., which underlie the chalk formation and rest on the Lias. It yields in England a vast quantity of excellent freestone and ironstone, and is also interesting in the highest degree for its fossils, which are numerous, varied, and in excellent condition. The strata of the series have been arranged as *Upper Oölite*, *Middle Oölite* and *Lower Oölite*. The Oölite forms the upper division of the *Jurassic System*, so called because the range of the Jura Mountains is almost entirely composed of such limestones.

Oomrawatee. See *Amraoti*.

Oonalashka, or UNALASKA (ō-nă-lăs'ka), one of the Aleutian Islands (which see).

Oost (ōst), JACOB VAN, the Elder, one of the best Flemish painters, born at Bruges in 1600; died in 1671. After laying the ground of his artistic education in his native land, he proceeded to Rome, and there became the pupil chiefly or Annibale Caracci. In his youth he was so successful a copyist of Rubens and Vandyck that his copies still deceive connoisseurs.—JACOB VAN OOST, the Younger, son of the preceding, born in 1637, studied at Paris and Rome, lived above forty years at Lille, and died at Bruges in 1713. His style is more marked, and his pencil is freer than that of his father.

Oosterhout (ō'stĕr-hout), a town in Holland, in the province of North Brabant, 5 miles northeast of Breda. It has potteries, breweries, tanneries, corn mills, beet-sugar factory, and some trade in grain, cloth and timber. Pop. 11,545.

Ootacamund, or UTAKAMAND (ō-tă-kă-mund'), a sanitary station in Southern Hindustan, and the summer headquarters of the Madras government, situated in the Neilgherry Hills, 70 miles south of Mysore. It is 7228 feet above the level of the sea, and lies in an amphitheater surrounded by noble hills overlooking an artificial lake nearly 1½ miles long. There are churches, hotels, schools, hospitals, public library, botanic gardens, etc. The mean temperature is about 53° Fahr. Pop. 18,596.

Ootrum (ō'trum), a soft, white, silky, and strong Indian fiber, regarded as a promising substitute for flax, derived from the stem of *Dæmia cetensea*, a plant of the nat. order Asclepiadaceæ. It occurs abundantly in numerous parts of Hindustan.

Opah (o'pa), a large and beautiful sea-fish (*Lampris luna* or *guttatus*) of the dory family, a native of the Eastern seas, but found in the Atlantic and Arctic Oceans, and sometimes, though more rarely, on the British coasts. It is about 4½ feet long and weighs 140 to 150 lbs. Its colors are very rich, the upper part of the back and sides being green, reflecting both purple and gold, and passing into yellowish-green below, the fins bright vermilion. The flesh is highly esteemed.

Opal (ō'pal), a precious stone of various colors, which comes under the class of pellucid gems. It consists of silica with about 10 per cent. of water, and is very brittle. It is characterized by its iridescent reflection of light. It is found in many parts of Europe, especially in Hungary, in the East Indies, etc. The substance in which it is generally found is a ferruginous sandstone. There are many varieties or species, the chief of which are: (*a*) *precious* or *noble opal*, which exhibits brilliant and changeable reflections of green, blue, yellow and red; (*b*) *fire opal*, which simply affords a red reflection; (*c*) *common opal*, whose colors are white, green, yellow and red, but without the play of colors; (*d*) *semi-opal*, the varieties of which are more opaque than common opal; (*e*) *hydrophane*, which assumes a transparency only when thrown into water; (*f*) *hyalite*, which occurs in small globular and botryoidal forms, with a vitreous luster; (*g*) *menilite*, which occurs in irregular or reniform masses, and is opaque or slightly translucent. Formerly the opal was believed to possess magical virtues; thus it was believed to confer invisibility when wrapped in a bay-leaf.

Open-bill (*Anastŏmus lamelligĕrus*), an African bird of the stork family, so named from the odd formation of the beak, which at the anterior end exhibits a gap between the mandibles as if part of them were worn away though they meet at the points. Their chief food is molluscs, and perhaps this formation of bill has something to do with the opening of the shells. Another species inhabits the East Indies.

Openshaw (o'pen-sha), a town of Lancashire, England, which may be regarded as a suburb of Manchester. Pop. 16,153.

Opera (op'e-rà), a musical drama, that is, a dramatic composition set to music and sung on the stage, accompanied with musical instruments and enriched by the accessories of costumes, scenery, dancing, etc. The component parts of an opera are recitatives, solos, duets, trios, quartettes, choruses, etc., and they are usually preceded by an instrumental overture. The lighter kind of opera in Germany, England and the United States, as well as the French *opéra comique*, is of a mixed kind—partly spoken, partly sung. The chief varieties of opera are the *grand opera* or *opera seria*, the name given to that kind which is confined to music and singing, of which the recitative is a principal feature; the *romantic opera*, or *opera drammatica* of the Italians, embracing an admixture of the grave and lively; the *comic opera*, or *opera buffa*; as well as many intermediate varieties. Though the Greek dramas were operatic in character, the opera proper is of modern date and of Italian origin, and would seem to have developed naturally from the miracle-play of the middle ages, the first operas dating from the sixteenth century. About the close of this century the poet Rinuccini wrote a drama on the classical story of *Daphne*, which was set to music by Peri, the most celebrated musician of the age. The orchestra of this first opera consisted of four instruments, namely, a harpsichord, a harp, a viol di gamba, and a lute. There was no attempt at airs, and the recitative was merely a kind of measured intonation. Monteverde, a Milanese musician, improved the recitative by giving it more flow and expression; he set the opera of *Ariadne*, by Rinuccini, for the court of Mantua; and in the opera of *Giasone* (Jason), set by Cavalli and Cicognini, for the Venetians (1649), occur the first *airs* connected in sentiment and spirit with the dialogue. The first regular serious opera was performed at Naples in 1615, and was entitled *Amor non ha Legge*. The first *opera buffa* is said to have been represented at Venice in 1624, where also the first stage for operas was erected in 1637. In 1646 the opera was transplanted to France by Cardinal Mazarin, about the same time to Germany, and somewhat later to England. In France there arose Lulli; in Germany, Keiser; in Italy, Scarlatti; and in England, Purcell, who are the chief operatic composers of the second half of the seventeenth century. The chief Italian operatic composers include, besides those already mentioned, Piccini, Jomelli, Cimarosa, Paisiello, in the eighteenth century, and Cherubini, Rossini, Bellini, Donizetti, Verdi, etc., in the nineteenth. Among the French composers are Grétry, Monsigny, Rousseau, Méhul, belonging to the eighteenth century, Boildieu, Auber, Halévy, Herold, A. Thomas and Gounod to the nineteenth. The chief recent composers of French comic operas are Offenbach, Lecoq, Hervé and Bizet. Among English composers of operas may be mentioned Arne and Shield in the last century; and of the present or recent times Balfe, Wallace, Macfarren, Sullivan, Mackenzie, Thomas and Stanford. It is the German composers, however, who have raised opera to the highest pitch of perfection, the list including such names as Handel, Gluck and Mozart in the eighteenth century, Beethoven, Weber, Flotow, etc., in the nineteenth. Meyerbeer, though German by birth, is to be classed rather with the modern French composers. In the most recent school of German operatic composition, at the head of which stands Richard Wagner, the vocal music of the piece is deprived of the prominent place formerly assigned to it, and is made subordinate to the other three elements of an opera—text, instrumentation and scenic decoration.

Opéra Bouffe (buf), a farcical form of opera buffa in which the characters, subject-matter, and music is intended to burlesque the more serious style of opera. Offenbach was the creator as well as the chief master in this art. The comic operas of Gilbert and Sullivan, both in the character of the music and the libretti, stand by themselves.

Opera-glass, a small binocular telescope of a low magnifying power, so called from its use in theaters. The two tubes are connected together, and have their foci adjustable by turning a milled-headed screw between them. See *Telescope*.

Operculum (ō-pèr'kū-lum), literally a lid or cover, and specifically applied to a horny or shelly plate developed in certain univalve mollusca upon the hinder part of the foot, and serving to close the aperture of the shell when the animal is retracted within it. It is also applied to part of the gill-cover of fishes.

Ophicleide

Ophicleide (of'i-klid), a brass wind instrument of music invented to supersede the serpent in the orchestra and in military bands. It generally consists of a wide conical tube, terminating in a bell like that of a horn, with a mouthpiece and ten holes or ventages which are stopped by keys. Ophicleides are of two kinds,

the bass and the alto; the former has a compass of three octaves and one note, ranging from B on the third space below the bass staff to C on the third space of the treble staff, including all the intermediate semitones. The alto ophicleide (an inferior instrument) has the same extent of compass but starts an octave higher.

Ophidia (o-fid'i-a), an order of reptiles comprising the serpents. See *Serpents.*

Ophiocephalus (o f - i-ō-sef'a-lus), a genus of fishes allied to the climbing perch, and like it able to live a long time out of the water.

Ophioglossum (of-i-ō-glos'um), a genus of ferns. See *Adder's-tongue.*

Ophir (ō'fer), a country or city to which the Hebrews made voyages in the time of Solomon, bringing home gold, almug-wood, and precious stones. Some identify it with the Ophir mentioned in Gen. x, 29, which was apparently situated in Arabia; while others place it in India, or in Africa.

Ophite (of'it), in petrology the name applied to certain serpentine rocks of the Pyrenees, consisting chiefly of granular feldspar and green amphibole.

Ophites (of'its). See *Gnosticism.*

Ophiuchus (of-i-ū'kus), the Serpent-bearer, called also *Serpentarius*; one of the old northern constellations, representing a man holding a serpent, which is twined about him. The moderns, however, make a separate constellation of the Serpent.

Ophiuroidea (of-i-ū-roi'de-a), an order of the Echinodermata, comprising star-fishes known as brittle-stars and sand-stars. These animals have long slender-jointed arms, which may either be branched or simple.

Ophthalmia (o f - t h a l' mi-a; Greek, from *opthalmos*, an eye), an inflammation of the mucous membrane which covers the globe of the eye, and of the corresponding surface of the eyelids. It is either acute or chronic, and its commonest cause is the presence of irritating matter between the eyelids or the exposure of the membrane to sudden cold. Its characteristic marks are pain, redness, a feeling as if sand were in the eye, and a copious flow of tears.

Ophthalmology (of-thal-mol'o-ji), the science of the anatomy, physiology and pathology of the eye. See *Eye, Sight.*

Ophthalmoscope (of-thal'ma-skōp), an instrument for observing the internal structure of the eye. It consists of a mirror (plane, that of Coccius, concave in that of Desmarres), by which light from an artificial source is directed into the eye of the patient, and a double-convex lens, by which the illumined parts of the structure of the eye are magnified in order that they may be more easily examined, the observer looking through a hole in the center of the mirror. The light is usually placed to the side of and slightly behind the patient's head.

Opie (ō'pē), AMELIA, a novelist, born at Norwich, England, in 1769; died in 1853. In 1798 she married John Opie, the well-known painter, and from this period began, under the encouragement of her husband, to publish her tales of *Father and Daughter, Adeline Mowbray, Detraction Displayed*, and various volumes of poetry. In 1807 she lost her husband, and thereupon returned to Norwich, where she continued to reside until her death.

Opie, JOHN, an English painter, the son of a carpenter, born near Truro, Cornwall, in 1761; died in 1807. Having shown a precocious aptness in portrait painting, he was taken to London in his nineteenth year by Dr. Wolcot (Peter Pindar), and there he acquired notoriety as the *Cornish Wonder.* When his portrait painting ceased to be fashionable he devoted himself to historical and Scriptural subjects with such success that he became a Royal Academician in 1788, and was elected professor of painting to the Royal Academy in 1805. He was the author of a biography of Sir Joshua Reynolds in Pilkington's *Dictionary of Painters*, and his four lectures on painting, with a memoir, were published by his wife (see above).

Opisthobranchiata (ō-pis-thō-bran-ki-ā'ta), a division of Gasteropoda in which the gills are placed posterior to the heart.

Opisthoc'omus. See *Hoatzin.*

Opitz (ō'pits) or OPITIUS, MARTIN, a German poet, born in 1597; died in 1639. He studied at Frankfort-on-the-Oder and at Heidelberg, and having afterwards visited Holland he went in 1621 to the court of the Duke of Liegnitz, whence in about a year he removed to become a professor of philosophy and classical literature at the University of Weissenburg (now Karlstadt). Becoming distinguished for his talents, he went in 1625 to Vienna, where the Emperor Ferdinand II bestowed on him the poetical crown and letters of nobility, when he assumed the title of Von Boberfeld.

among his works are a poem on *Mount Vesuvius*, *Silvæ*, *Epigrams*, etc; but he is more important for the influence of his teaching regarding correctness in poetic style than for his own poems.

Opium (ō'pi-um), the inspissated juice of a species of poppy (*Papāver somnifĕrum*), cultivated on a large scale principally in Hindustan and in Asiatic Turkey, but well known in many places as a garden plant, being an annual with white, red or violet flowers and glaucous leaves. The opium is the juice that flows from incisions made in the green heads or seed-capsules of the plant after the fall or removal of the petals, and the best flows from the first incision. The juice is at first a milky liquid, but soon solidifies and turns black, and is then scraped off and collected. It is one of the most energetic of narcotics, and at the same time one of the most precious of all medicines, and is employed in a great variety of cases, but most commonly for the purpose of procuring sleep and relief from pain. In medicine it is very commonly used in the form of *laudanum*, which is a simple tincture or extract in spirits of wine; it is also an ingredient in various *patent* and other remedies. Another opium preparation is *morphine* (which see). In its natural state opium is heavy, of a dense texture, of a brownish-yellow color, not perfectly dry, but easily receiving an impression from the finger; it has a faint smell, and its taste is bitter and acrid. The chief active principle of opium is morphine, or morphine in combination with meconic acid. The principal part of our supply of opium is brought from Turkey, whence it is imported in flat pieces or cakes, covered with leaves. In the case of many temperaments opium produces such agreeable effects, whether a delightful dreamy calm, a state of pleasant exhilaration, or beatific visions, that numbers of persons are led to use it habitually, as others use alcohol in some form, though over-indulgence in it is attended with at least as evil effects as over-indulgence in the latter. But like tobacco it is taken by vast numbers without any apparent result one way or other. Some habitual takers of opium can take as much in a day as would kill ten or twenty persons unaccustomed to it. The habitual consumption of opium by persons otherwise in good health is called *opium eating*, *the opium habit*, *the morphine habit* or *morphinism*. It is taken through the mouth, injected under the skin, or (commonly in the Orient) smoked. The pipe, or rather the stem of the pipe, is about the length and size of an ordinary flute; the bowl is generally made of earthenware. The smoker, who is always lying, or at least reclining, takes a small portion of opium about the size of a pea on the end of a spoon-headed needle, heats it at a lamp, and then places it in the bowl of the pipe, the pellet of opium having previously been perforated with the needle. He then brings the opium to the flame of the lamp, inhales the smoke in several inspirations, and is then ready to repeat the process with a fresh quantity of opium until the desired intoxication ensues. Large quantities of opium were long consumed in China, a great part of which formerly came from India, though probably as much more was produced in China itself. The Indian opium, however, was preferred to their own by the best judges among the Chinese. In India it was cultivated (by private cultivators) as a government monopoly, and produced a large revenue to the government. Opium thus gave rise to the 'Opium War' of 1840–42, between England and China, arising from the destruction by Chinese authorities of a large quantity of opium imported by British merchants. Though defeated, China continued to oppose the introduction of opium, and was encouraged to take action again when the United States opposed the introduction of opium into the Philippines and finally prohibited it. Following the agreements of the International Opium Congress held at Shanghai in 1909, the Indo-China opium traffic has come to an end, India thereby sacrificing a sum of $20,000,000 annually. The opium dens of Hongkong were closed by order of the home Government in England, and in China itself vast areas under poppy cultivation were condemned and replaced by other crops. In both Europe and America stringent laws have been passed restricting the importation and sale.

Opium Poppy. (*Papāver somnifĕrum*)

Opodeldoc (op-ō-del'dok), a solution of soap and alcohol, with the addition of camphor and volatile oils. It is used externally against rheumatic pains, sprains, bruises, and other like complaints. Also called *soap liniment*.

Opoponax (o-pop'ā-naks), a fetid gum-resin, of uncertain origin and unpleasant odor, occasionally imported from Persia, and used in ancient times as an antispasmodic. There is

a compound perfume which also receives this name.

Oporto (ō-pōr'tą; Portuguese, *O Porto*, the port), a large city and seaport of Portugal, the second in the country, capital of the province of Entre Douro e Minho, on a steep declivity on the right bank and about 2 miles from the mouth of the Douro, 170 miles north of Lisbon. The river is crossed by two iron bridges of recent construction, one of them, the railway bridge, especially bold and striking. The appearance of the city on a first approach is very prepossessing, but in reality most of the streets are narrow, crooked and dirty, and the houses are irregularly constructed. Among the chief buildings are the Gothic cathedral, the church of S. Francisco (Gothic), the bishop's palace, an enormous building, the English club, the exchange, and the Torre dos Clerigos, a granite shaft 210 ft. high. There are also museums, a large library, medical college, Crystal Palace and fine garden, etc. The principal trade is in wine, white and red, but chiefly the latter (*port* wine so named from this town), which is principally exported to Britain. There are some manufactories of hats, silks, cotton, woolen and linen stuffs, pottery, lace, glass, leather and paper, etc. Oporto was at one time the capital of Portugal. In 1809 Wellington drove the French out of it after the remarkable passage of the Douro. Pop. (1914) 200,000.

Opossum (o-pos'um), the name of several species of *Didelphys*, a genus of marsupial mammals, having four *hands* and a long prehensile tail. They are nocturnal animals, arboreal in their habits, living constantly on trees, and there pursuing birds, insects, etc., although they do not despise fruit. The females of certain species have an abdominal pouch in which are the mammæ, and in which they can inclose their young. The best-known species of opossum is the *Didelphys virginiana*, very common in the United States. It is almost the size of a large cat, the general color whitish-gray, and the whole hair of a wool-like softness. On the ground the motions of the opossum are awkward and clumsy, but on the branches of a tree it moves with great celerity and ease, using the prehensile tail to assist its motions. When caught or threatened with danger the opossum counterfeits death, and 'playing 'possum' has on this account passed into a proverb as used to indicate any deceitful proceeding. The female has from ten to fifteen young, which are for a long time nourished in the pouch, to which they resort when alarmed. The flesh of the animal is greatly enjoyed by the negro population.

Opossum-shrimp, the popular name of several species of *Mysis*, a genus of small crustaceans. They receive their name from the females carrying their eggs and young in a pouch between the thoracic legs.

Oppeln (ōp'peln), a town in Prussian Silesia, on the Oder, 53 miles southeast of Breslau. It has an old royal castle, gymnasium, hospital, etc.; tobacco factory, cement and soap works, breweries, limekilns, and some shipping trade. Pop. (1910) 33,007.

Oppenheim (ōp'en-him), an old town of Germany, in Hesse, on the left bank of the Rhine, 12 miles south of Mainz, on the slope of a hill abounding in vineyards, a place of considerable historical importance in the Thirty Years' war and later. Pop. 3696.

Oppian (op'pi-an), the name of two Greek authors, one of whom wrote a poem entitled *Halieutica* (Fishing), and the other poem on *Cynegetica* ('Hunting'). The author of the *Halieutica* flourished about 170 A. D. His poem consists of about 3500 lines, divided into five books. The author of the *Cynegetica* was born at Apamea or Pella, in Syria, and flourished about 210 A. D. His work, which was dedicated to the Emperor Caracalla, is composed of four books containing 2100 hexameter lines. There is also a paraphrase of a poem on *Hawking*, attributed to Oppian; but it is doubtful to which of the two it belongs.

Opposition (op-u-zi'shun), in astronomy, the situation of two heavenly bodies when diametrically opposed to each other, or when their longitudes differ by 180°. Thus there is always an *opposition* of sun and moon at every full moon; also the moon or a planet is said to be in *opposition* to the sun when it passes the meridian at midnight. See *Conjunction*.

Opposition, in politics, the party who, under a constitutional government, are opposed to the existing administration, and who would probably come into power on its displacement.

Ops, the Roman female divinity of plenty and fertility. She was regarded as the wife of Saturn, and, accordingly, as the protectress of everything connected with agriculture.